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Ethnobotany of Michigan's Upper Peninsula: A Limited Survey of Current Plant Uses

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ETHNOBOTANY OF MICHIGAN'S UPPER PENINSULA: A LIMITED SURVEY OF CURRENT PLANT USES

by

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ABSTRACT

Current food, medicine, dye, smoking, intoxication, basket making, and several miscellaneous uses of plants by Upper Michigan residents are recorded. Information was obtained from interviews with 74 Upper Michigan residents. Food use was most common, 48 of those people interviewed using 98 species for this purpose. Thirty-three people interviewed used 49 species for medicine, 8 people interviewed used 54 species for dyeing purposes, 8 people used 8 species for smoking, 7 people used 5 species for intoxication, and 12 people of those interviewed used 20 species for technological and other miscellaneous purposes. The uses for a total of at least 153 species of 121 genera in 65 families were recorded. Methods of preparation are discussed where they are known. Information on toxicity and nutrition is included when available and relevant. Information on each plant's habitat and season of availability is also included. Several of the plants show potential for more intensive utilization.

PREFACE

Anyone who wishes to use wild plants should be aware of the possibility of exterminating a particular population of a plant species. If you collect plants, only collect those parts you intend to use, and leave a substantial portion of the population undisturbed so that it may at least maintain itself. This is especially important if the underground portions of the plant are to be used or disturbed.

A lesson can be taken from the Indians who are said to have never collected the first plant that was found of a particular kind; rather they would wait for another specimen and then would pick it only after explaining (to the plant) why it was necessary to do so and burying an offering of tobacco at the base of the plant.

I do not know whether the events described above always occurred in this manner. However, it indicates an attitude which would certainly help prevent the destruction of a population of plants by overexploitation.

Plant uses are listed in this work as they were reported to me, and no claim is made concerning the

efficacy or potential hazards of the uses. Anyone experimenting with any of these uses does so strictly at his or her own risk.[1]

[1]Neither the author of this work, nor his committee, nor Northern Michigan University, nor any of the people who contributed to this work in any way or form assume any responsibility for the consequences resulting from the use or abuse of any information contained in this work.

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I am deeply grateful to a great number of people who helped me in conducting my study. The members of my committee offered valuable guidance, suggestions, and encouragement throughout the study. R. Chas. "Smokey" and Martha Gauthier shared much of their great store of knowledge with me during a field trip to Wetmore Bog and a visit to my house. Robert P. Brebner and Militza Georgevich provided transportation for several collecting trips and sampled several of the plants used in Upper Michigan, as well as sharing their knowledge with me. Alice Tredway offered much encouragement throughout most of this study.

My family tolerated many unusual aromas and an overloaded refrigerator during my experimentations with various plants.

Marsha Lessun, N.M.U. reference librarian, obtained many obscure manuscripts needed during the course of my study.

Finally, I wish to extend a special thanks to all the people who shared their knowledge of useful plants with me. They are too many to list here, but may be found under Communications with Upper Michigan Residents Cited and Communications with non-Upper Michigan Residents Cited.

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CHAPTER I

INTRODUCTION

Michigan's Upper Peninsula consists of a geographical area separated from the lower peninsula by the Straits of Mackinac which join Lakes Michigan and Huron. The entire northern border consists of shoreline along Lake Superior with the southern boundary formed by the shore of Lake Michigan and the southwestern boundary by the State of Wisconsin. The Saint Mary's River system, which drains Lake Superior into Lake Huron, separates the eastern tip of the Upper Peninsula from the Province of Ontario, Canada.

The population of Upper Michigan slightly exceeds 300,000 (304,347 in 1970 census) people scattered across 16,446 square miles. The ethnic composition is diverse with a heavy concentration of people of Finnish descent and two major groups of Native Americans. The discovery and mining of iron and copper in the Upper Peninsula, beginning in the mid-1800's, and the exploitation of the region's timber resources resulted in an immigration of people to the area of Finnish, Cornish, Swedish, and Italian descent. The earliest known European influence dates back to the 1600's with Jesuit missionaries and French voyageurs. The predominant Native Americans inhabiting the Upper Peninsula during the last 100 years have consisted of Ojibwa (Chippewa) Indians.

The purpose of this study served to deal with the following problems. (1) Published material on ethnobotany specifically concerning Upper Michigan[1] is very limited and poorly documented; (2) ethnobotanical information is lost as older members of the community die; and (3) it is of historical importance to have ethnobotanical information preserved and made available to the public.

Upper Michigan Plant Communities

Among the several different plant communities of Upper Michigan, the conifer-hardwood forests are an important element over much of the region. The main limiting factors determining species composition are probably soil type and moisture.

A typical northern forest of the mesic variety would contain sugar maple (*Acer saccharum*), hemlock (*Tsuga canadensis*), beech (*Fagus grandifolia*), yellow birch (*Betula lutea*), elm (*Ulmus americana*), and basswood (*Tilia americana*). Most of the ground layer species bloom during the spring prior to complete foliation by the hardwood trees. Curtis (1959), for example, states that in Wisconsin forests of this type, 70% of these plants bloom before June 15 and only 5% after August 15. Species in the Liliaceae comprise a conspicuous group within these climax forests.

[1]For the purposes of this thesis Upper Michigan, Michigan's Upper Peninsula and Upper Peninsula will be used synonymously.

Northern forests of the xeric variety would typically contain jack pine (Pinus banksiana), red pine (Pinus resinosa), and white pine (Pinus strobus), as well as red maple (Acer rubrum), oak (Quercus), and aspens (Populus spp.). The number of ground layer species in xeric forests which flower during the summer is greatly increased when compared to the mesic forest type. Members of the Ericaceae are important constituents of ground layer species.

Wetland forests of Upper Michigan are either of a coniferous type containing black spruce (Picea mariana), tamarack (Larix laricina), and/or northern white cedar (Thuja occidentalis), or of a hardwood variety containing black ash (Fraxinus nigra) and yellow birch (Betula lutea). Wetland forest ground layer plants produce their flowers in the spring with members of the Ericaceae being among the more common species.

Boreal forests communities are found in colder regions of Upper Michigan. Balsam fir (Abies balsamea) and white spruce (Picea glauca) are dominant trees in this community. White or paper birch (Betula papyrifera) and some aspen species (Populus spp.) also occur in these forests.

Another important plant community is the sphagnum bog with Ericaceous plants abounding, such as Labrador tea and cranberries.

Pine barrens are an important plant community, both in size and in plant resources that they provide. The most

common tree in these areas is the jack pine (*Pinus banksiana*). Other important plants in these areas are sweet fern (*Comptonia peregrina*), blueberries (*Vaccinium* spp.), cherries (*Prunus* spp.) and, occasionally, bracken fern (*Pteridium aquilinum*). Asteraceae, Poaceae, and Rosaceae are also important members of this community. Pine barrens provide collectible fruit during July and August.

Other communities of importance are the shorelines, including dune areas, along the Great Lakes, and disturbed open areas such as fields and vacant lots.

Organization

The data are arranged taxonomically by families, beginning with the Ascomycetes and progressing through the Asteraceae of the Dicotyledonous flowering plants. For the purposes of this paper lichens, which are composed of a fungus and usually an alga, will be considered a separate plant division.

Within each family the species are arranged alphabetically. When appropriate and available, remarks concerning the habitat, distribution, toxicity, and nutritional properties will be listed with the plant.

Appendices list the plant species alphabetically for each category of use (food, medicine, dye, smoking, intoxicant, ceremonial, and technological and miscellaneous).

CHAPTER II

LITERATURE REVIEW

The Jesuit Relations (Thwaites 1959) contains much of the earliest contemporary information available on plant usage in this general geographical area. Unfortunately, much of the information is not botanically precise, and sometimes the identity of the people using the plant is not clear. Much of the information was compiled before extensive acculturation occurred, so it is a valuable source of ethnobotanical information (Gill, S. 1977a).

During the 1920's and 1930's, Huron H. Smith of the Public Museum of the City of Milwaukee conducted and published several extensive studies on the ethnobotany of the Indians then living in Wisconsin (Smith, H. 1923, 1928, 1932, 1933). Frances Densmore compiled and published valuable data concerning the ethnobotany of the Ojibwa (Chippewa) Indians living in Minnesota, Wisconsin, and Ontario (Densmore 1928, 1929), and her work on Menominee music contains useful information on plant usage (Densmore 1932).

Several less extensive works have been published which discuss the ethnobotary of Wisconsin's Indians or the Indians of the Upper Great Lakes region in general (Gill, S. 1977a). Richard Yarnell (1964) summarized much of this information in his useful "Aboriginal Relationships between Culture and Plant Life in the Upper Great Lakes Region."

No published work has been devoted to the ethnobotany of Upper Michigan. Naegele's (1974) "Edible Wild Plants of the Copper Country" contains some ethnobotanical information, including the uses he makes of the plants, but it is mainly a guide to plants that could be used rather than a catalogue of plants that are used.

Some information is available concerning pre-contact uses from the middle to latter part of the Middle Woodland period (about 250 A.D.) onward from archaeological sites in the southern portion of Upper Michigan (see, for example, Brose 1970, Fitting 1968, 1974, Ford 1974, Yarnell 1964). I have studied and identified plant material which was excavated from the Menominee River watershed under the direction of Marla Buckmaster of Northern Michigan University (Gill, S. 1977b). Some ethnobotanical data from archaeological sites on Isle Royale is also available (see Yarnell 1964).

CHAPTER III

METHODS AND MATERIALS

This study was limited to plants that are native species, introduced species, and species which have escaped from cultivation. Also, a select group of cultivated or imported plants having noteworthy uses was included.

Only those plant uses which were specifically reported to me by the people I interviewed or for which I made direct observations of the use are included here. For example, the leaves of cat-tails can be used to make baskets; however, none of my interviews revealed that cat-tail leaves were used for this purpose in Upper Michigan, so this use is not included in this work.

The study was limited in time to information about current use of plants or uses remembered by the people interviewed. Historic and prehistoric data were not included, nor data from neighboring areas (e.g. Wisconsin), as this material is beyond the scope of this work.

A list of the persons interviewed, including the interviewees' places of residence and dates of the interviews, is given at the end of the paper before the list of references cited. As the uses of each plant are described, the names of the interviewees reporting the use are cited. Dates of the interviews are not given, to distinguish these citations from those of a bibliographic nature.

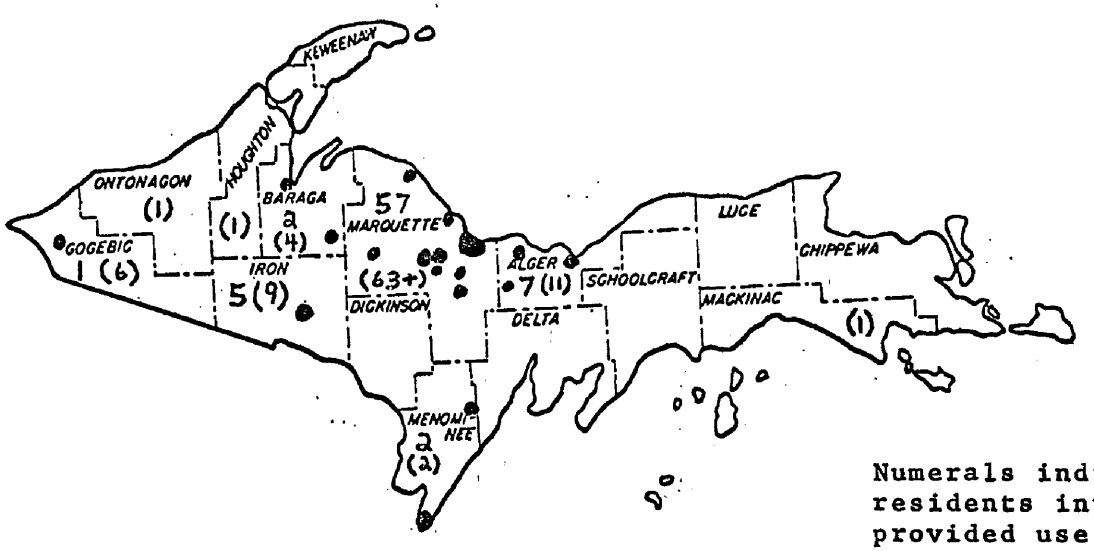
Sources of data for the purpose of this study consisted of people in the following categories: (1) personal acquaintances, friends, and relatives; (2) people recommended to me by relatives, friends, and personal acquaintances; (3) chance acquaintances; (4) people who responded to advertisements placed in the Action Shopper, a publication distributed throughout Marquette County and in parts of Alger and Baraga Counties with a reported circulation of over 25,000 [homes] (Action Shopper, 1977); and, (5) people telephoned who were listed in the Sand River and Deerton directory. These two small settlements located approximately 20 miles east of Marquette were selected because the areas can be telephoned as a local call and the investigator assumed there were elderly residents who could reveal pertinent ethnobotanical information. Of approximately seven persons interviewed by this technique, five actually described uses of one or more plants which resulted in usable data.

My objective in this study was to catalogue the purposes for which plants were used by Upper Michigan residents. Financial and travel restrictions under which this study was conducted prohibited the use of a randomly selected sample of the population. However, people were interviewed from as many ethnic backgrounds, geographical areas, economic levels, social groups, and age groups as possible. The ethnic backgrounds represented by the 74

persons interviewed include Scottish, Cornish, English, Belgian, French, Swiss, Italian, Serbian, Czech, Polish, Swedish, Finnish, Lithuanian, Austrian, French Canadian, Ojibwa (Chippewa), Ottawa, Potawatomi, Menominee, and Mohawk. Residents of Marquette, Alger, Iron, Menominee, Baraga and Gogebic Counties provided usable data. (See map shown in Figure 1.)

A total of approximately 98 residents (or .032% of the total population) were interviewed for data collection; 74 (or about .024% of the total population) provided usable data.

For a general idea of relative frequency of use, see Appendix A.



Numerals indicate number of residents interviewed who provided useful data. Numerals in parentheses indicate approximate number of residents contacted as potential sources of ethnobotanical information.

Shaded regions indicate location of residence.

FIGURE 1

Distribution of people interviewed by place of residence

CHAPTER IV

RESULTS

Division Eumycota

Mushrooms

Historically, the Indians of this region (Upper Great Lakes) reportedly did not use mushrooms for food, apparently believing them to be poisonous (Smith, H. H. 1923, 1928, 1932, 1933). They did, however, use puffballs for medicine (Densmore 1928; Schofield; Smith, H. H. 1923, 1928, 1933). Certainly the avoidance of mushrooms by the Indians of the Upper Great Lakes region was due, at least in part, to the great probability of picking a poisonous type (Smith, H. H. 1932).

At the present time, picking mushrooms for food is popular with many segments of Upper Michigan's population although some people strictly avoid all wild mushrooms (Gilbert; Nadeau). Mushroom collectors can, in my opinion, be tentatively classified into one of two generalized groups.

The first group consists of people who have acquired their knowledge, which has been handed down from generation to generation (Bartelli), mainly from their older relatives and/or friends. Most of these people are European immigrants or their immediate descendants. Of the people interviewed, those from Italy and central and eastern Europe were generally more inclined to collect wild

mushrooms than those from the British Isles and Scandinavia.

Members of this first group often used folk methods for determining the edibility or toxicity of various mushrooms. One of the more common methods of testing for mushroom toxicity was to place a silver coin or spoon in the pot with the cooking mushrooms; if the silver turned black, the mushrooms were considered poisonous (Gleason, M.). Another interesting test consisted of cooking the mushrooms with an onion. The mushrooms were deemed poisonous if the onion turned black (La Brun). Neither of these tests is in the least bit reliable (Elliott, Hall, Kerr, Rolland, Smart & Swinney 1961; Rinaldi & Tyndalo 1974).

Although many of these people in this group have relied on information obtained from other people, some of these people have owned field guides to mushrooms, Alexander Smith's guide (1963) being one of the more popular books with both this and the following group.

The second group of people may be of any ethnic background, have acquired their knowledge mainly from mushroom manuals, and often have more formal education than members of the first group. Members of the second group usually never had the opportunity to learn about mushrooms from their parents or other older relatives, and they more or less have followed the guidelines found in the field guides

for identifying mushrooms and have used the guides' recommendations on edibility and toxicity (Gill, S.).

One should remember that these two groups are composite characterizations and that many people fall somewhere between the two types, having some characteristics of each group. Most people in both groups were apparently first introduced to the mushroom gathering habit by a friend (Gill, S.).

The location of mushroom patches is often a closely guarded secret, just as the locations of special fishing spots are kept secret. People who are avid collectors often will remember or record the location of prolific stumps or other spots as well as the time of fruiting. Often they may have a favorite location that they will return to year after year.

Some residents are aware that a synergic reaction resulting in toxicity may occur when some mushroom species are consumed with some other substance, usually ethanol (such as can occur with some species of Coprinus) (Syricini, Tredway), or that an individual may be sensitive to a usually harmless species (Koenig). Some individuals believe that mushrooms may become toxic due to concentration of metals in their tissue (Tredway), a situation for which there is some evidence (Bartelli).

Statements concerning the food value of mushrooms have often been contradictory. Some generalized figures

of mushroom constituents are as follows: Water 85-89%, protein 3-5%, fat 0.4-1%, carbohydrates 6-10%, and minerals 1% (Groves 1962; Rinaldi & Tyndalo 1974). Mushrooms have been considered good sources of minerals such as iron and copper (Groves 1962) as well as phosphorous, potassium, and zinc (Rinaldi & Tyndalo 1974). Various species also have been found to have high levels of vitamin C, niacin, and pantothenic acid, as well as other B vitamins, and vitamins A, D, and K may also be present (Groves 1962; Rinaldi & Tyndalo 1974). The caloric value of mushrooms is low, about 30 calories per 100 grams (Groves 1962). Groves (1962) stated that nutritionally mushrooms compare favorably with most vegetables.

Sub-division Ascomycotina

Class Discomycetes

Order Pezizales

Family Helvellaceae

The Morel Family

This family contains some of the most popular edible fungi found in Upper Michigan, certainly the most sought after spring species. Members of the genus Morchella have been the most avidly hunted, closely followed by the "edible" species of the genus Gyromitra. Verpa bohemica has been collected to a lesser extent by Upper Peninsula residents (Gill, S.). Only spring fruiting members of

this family have been collected for food in Upper Michigan according to the reports of the people interviewed.

Gyromitra Fries

Gyromitra esculenta Fries

[= Helvella esculenta]

Beefsteak morel

Beefsteak mushroom

False morel

Lorchel

Gyromitra gigas (Krombh.) Quél.

[= Helvella gigas Krombh.]

Bull nose (Bartelli 1970)

Snow morel (Miller 1972)

Snow mushroom (Smith, A. 1963; Smith & Smith 1963)

Alexander Smith (1963) states that in Michigan Gyromitra esculenta and Gyromitra gigas often have been confused. Since none of the people interviewed supplied sufficient data to classify the particular mushrooms as one species or the other, they will be considered together.

Beefsteak mushrooms have been very popular in Upper Michigan, although my research indicated they are not as popular as the true morels (Morchella spp.). Although some people have avoided them because of their possible toxicity (Gill, S.; Koenig), beefsteak mushrooms have often been collected for food (Agnoli; Davis; Georgevich;

Spyker; Vissering) despite the danger of severe poisoning or death.

One report of poisoning was obtained from Tredway which apparently can be attributed to Gyromitra esculenta. According to Tredway, during the 1950's three people, including herself, each consumed approximately equal portions of beefsteak mushrooms. Two of the three people became sick, the mushrooms having caused no illness in Tredway, who believed the different reactions could be attributed to the fact that one of the people who became ill had consumed beer before supper and the other had consumed wine, while she had consumed no alcohol.

Reactions to Gyromitra esculenta vary considerably, from producing no toxic reaction (Georgevich), illness (Tredway), or even death (Bartelli 1970; Buck 1961; Dearness 1911; Hendricks 1940; Simons 1971), and have recently been found to result from monomethylhydrazine and its derivatives (Miller 1972; Simons 1971; Thasnakorn 1975). Simons (1971) believes the relatively low frequency of poisoning from this species is a result of the preparation procedures which often include boiling the mushrooms for a long time in a large amount of water and then discarding the cooking liquid, which should remove much of the toxicity since monomethylhydrazine boils at 87.5°C. This technique of preparation does not offer complete protection, however (Smith, A. 1963; Miller 1972).

Gyromitra gigas has generally been considered edible in North America (Bartelli 1970; Miller 1972; Smith, A. 1963; Smith & Smith 1963) although Thasnakorn (1975) states that Gyromitra gigas contains gyromitrin, from which monomethylhydrazine is produced by hydrolysis.

In this region, Gyromitra esculenta and Gyromitra gigas have been collected under conifers and mixed stands from when the snow melts in the spring until the middle of May (Bartelli 1970; Smith, A. 1963).

Morchella

Morels

Morchella angusticeps Peck

Black morel

Narrow capped morel

Morchella crassipes (Vent.) Pers.

Morchella esculenta Fries

White morel

Sponge mushroom

The true morels have been perhaps the most popular group of mushrooms in Upper Michigan and the United States in general (Gill, S.; Miller 1972; Smith, A. 1963). They have been avidly sought during the spring for food use (Agnoli; Arsenault; Comment; Davis; Ekert; Georgevich; Gill, S.; Holmgren; Koenig; Mrva; Robertson, E.; Snitgen, D.; Snitgen, M.; Spyker; Temple; Vissering; Wilcox).

Morels usually fruit in the spring with the most frequent time in Upper Michigan being late April and May (Bartelli 1970).

Morels may be found along streams, in open mixed and hardwood forests, and in old orchards (Bartelli 1970; Bigelow 1974; Christensen 1968; Graham 1944; Groves 1962; Krieger 1936; Miller 1972; Smith, A. 1963). Morchella angusticeps can also be found in areas where conifers dominate (Miller 1972; Smith, A. 1963) and in wooded areas where aspens predominate (Gill, S.).

Verpa bohemica (Krombh.) Schrdt.

[= Morchella bispora Sorok.]

Early morel (Smith, A. 1963)

Skirted morel (Temple)

Upper Michigan residents have collected Verpa bohemica for food (Georgevich; Koenig; Temple) although some people realize that this mushroom may produce a toxic reaction (Georgevich; Koenig). Based on data obtained during this study, Verpa bohemica's popularity in Upper Michigan has been less than that of either the true morels (Morchella spp.) or the false morels or beefsteak mushrooms (Gyromitra esculenta and G. gigas), although some people may have confused Verpa bohemica with members of the genus Morchella.

This mushroom has been considered questionable for eating purposes (Bartelli 1970; Smith, A. 1963).

Reactions to Verpa bohemica vary considerably, depending both on individual sensitivity and the quantities of fungus consumed (Bartelli 1970; Koenig; Miller 1972; Smith, A. 1963; Smith & Smith 1963). The only first hand report of toxicity obtained from an Upper Peninsula resident came from Harry Koenig, M.D., of Ishpeming. Dr. Koenig said he ate a "great quantity" of Verpa bohemica after which he became ataxic, suffering a loss of coordination which he described as similar to being drunk. The symptoms only lasted an hour or so. Koenig said others can eat similar quantities [of Verpa bohemica] with no ill effects. Alexander Smith (1963) reported that he has heard of a case in Upper Michigan of a person becoming quite ill after consuming mushrooms (apparently this species) for three days in a row.

Verpa bohemica prefers rich, wet soil in areas wet from spring runoff, along stream edges, or in swampy areas, but not the soil of sphagnum bogs (Bartelli 1970; Smith, A. 1963). It is also found in open woods (Groves 1962) or under Populus species (Bartelli 1970).

Verpa bohemica generally fruits in this area during the second half of April and the first half of May (Bartelli 1970; Smith, A. 1963; Temple).

Sub-division Basidiomycotina

Class Hymenomycetes

Order Agaricales

Family Amanitaceae

The Amanita Family

Amanita Fr.

This genus contains some of the most dangerous mushrooms known (Groves 1962; Kauffman 1918), a situation which has been recognized by several Upper Michigan residents.

Amanita muscaria (Fr.) S. F. Gray

Fly amanita

Fly agaric

Fly mushroom

These mushrooms have been reportedly used for food[1] by people of Italian descent living in Negaunee, Michigan (Agnoli; Bartelli).

To prepare the mushrooms for food, the caps are first peeled, then they are boiled in several changes of water.

[1]Most authorities regard Amanita muscaria as strongly toxic (Bigelow 1974; Fischer 1918; Graham 1944; Groves 1962; Kauffman 1918; Korhonen 1973; Krieger 1936; Lange & Hora 1963; Lough & Kinnear 1970; Miller 1972; Rinaldi & Tyndalo 1974; Smith, A. 1963; Smith & Smith 1963; Tuomikoski 1958). Despite its strong toxicity, Amanita muscaria has been used for food by some people, both in North America (Bartelli; Fischer 1918; Krieger 1936; Smith, A. 1963; Smith & Smith 1963) and in Europe (Fischer 1918; Rinaldi & Tyndalo 1974; Tuomikoski 1958). The directions for removing the poison are generally to peel the caps, then boil them in several changes of water (Bartelli; Smith, A. 1963; Tuomikoski 1958).

After this pretreatment, they are canned, fried or otherwise prepared for eating (Bartelli).

Bartelli has talked with a man from Negaunee who has eaten Amanita muscaria, and she was able to examine specimens he had collected so as to confirm the veracity of the identification.

A few Upper Peninsula residents were aware that consumption of Amanita muscaria may produce intoxication[2] (including hallucinations), and although I was unable to locate anyone who had tried this mushroom for this purpose, two people have collected the caps and indicated their intentions to try this fungus for intoxication purposes during the summer of 1977 (Confidential communications: Magic mushrooms).

Amanita muscaria occurs singly or in clusters under both hardwoods and conifers from spring through the fall (Groves 1962; Kauffman 1918; Krieger 1936; Miller 1972; Smith, A. 1963; Smith & Smith 1963). In Upper Michigan, Amanita muscaria fruits from June onward under birches and mixed forests, and it is especially common in Upper Michigan during late summer and fall under jack pine (Pinus banksiana) (Gill, S.).

[2]Amanita muscaria has also occasionally been used in other parts of North America (Kadouse) and in Eurasia (Fischer 1918; Krieger 1936; Murrill 1910; Simons 1971) as an intoxicant.

Family Tricholomataceae

Armillariella mellea (Fr.) Karsten

[= Armillaria mellea (Fr.) Kummer]

Honey mushroom

Stump mushroom

This popular fall mushroom has been used for food by many Upper Peninsula residents (Gill, S.; Holmgren; Snitgen, D.; Snitgen, M.; Thoren), and is occasionally canned (Bartelli 1976a), frozen (Snitgen, M.; Thoren), or pickled (Gleason, M.) for storage. This mushroom reportedly produced flatulence in some people who ate cooked A. mellea which had been preserved by freezing (Snitgen, D.) and may be toxic when raw (Bartelli 1976a; see also Rinaldi & Tyndalo 1974).

Armillariella mellea grows in small to large cespitose clusters on both living and dead trees or from buried wood (Graham 1944; Groves 1962; Homola 1973; Kauffman 1918; Krieger 1936; Miller 1972; Smith, A. 1963). In Upper Michigan, Armillariella mellea generally fruits from late August through October although it has been found as early as July and as late as November, with two distinct forms in Upper Michigan (Bartelli 1976a).

Collybia familia Peck

[= Clitocybula familia (Pk.) Singer]

Button mushroom[3] (Temple)

[3]This refers to a stage through which most agarics pass.

Collybia familia has been used for food by Vernice Temple under the name of button mushroom.

Collybia familia fruits from August through October in large cespitose clusters on old conifer logs, particularly tamarack (Larix laricina) and hemlock (Tsuga canadensis) (Graham 1944; Kauffman 1918; Krieger 1936; Smith, A. 1963).

Pleurotus Fr.

Oyster mushrooms

Pleurotus ostreatus (Fr.) Kummer

Oyster mushroom

Pleurotus sapidus Kalchbr.

[= Pleurotus cornucopiae

(Paulet ex. Pers.) Rolland]

Oyster mushroom

The oyster mushrooms have been popular as food items in Upper Michigan (Agnoli; Brebner; Felt; Georgevich; Gill, S.; Snitgen, D.; Snitgen, M.; Wilcox), and have often been found in great abundance, especially in the spring and fall. Often an odor and taste similar to anise can be noted, which has been objectionable to some people (Georgevich).

Oyster mushrooms often have large pilei (up to approximately 25 cm. across) found in overlapping clusters on logs and stumps of deciduous trees and are generally available in Upper Michigan from May through October (Gill, S.).

These two species have not been well defined in the literature. Anderson, Wang and Schwandt (1973) have studied this problem and report that the only reliable characteristic for differentiating the species is the color of the spores, Pleurotus ostreatus having white spores and Pleurotus sapidus having lilac colored spores. In their study they found Pleurotus ostreatus only on aspen, and Pleurotus sapidus on a variety of hardwoods, but only twice on aspen. They also found that the color of the pilei varied with light intensity rather than from one to the other species (Anderson, N.A. et al. 1973).

Tricholoma flavovirens (Fr.) Lundell

[= Tricholoma equestre (Fr.) Kummer]

Chartreuse mushroom (Bartelli; Tredway)

The chartreuse mushroom has been used for food by some of the people living in Alger County (Tredway). This mushroom, which Ingrid Bartelli has identified as Tricholoma equestre, grows in Upper Michigan among reindeer moss (Cladonia spp.) under jack pine (Pinus banksiana) and probably other pines, sometimes buried partially in the sand (Tredway).

Family Coprinaceae

The Inky Cap Family

Several members of the genus Coprinus are used for food in Upper Michigan. Panaeolus may possibly be used as an intoxicant. (See discussion of this possibility under Psilocybe.)

Coprinus

Inky caps

An interesting type of toxicity has been noted with some species, most notably Coprinus atramentarius (Christensen 1975; Fischer 1918; Simons 1971). The syndrome occurs in some (but not all) people who consume alcohol shortly before or up to 48 hours after consuming the mushrooms (Christensen 1968, 1975; Simons 1971; Thasnakorn 1975). The raw mushrooms reportedly do not produce this effect (Simons 1971).

Coprinus micaceus also (but less frequently than Coprinus atramentarius) produces these same effects with alcohol in some people (Christensen 1968, 1975; Rinaldi & Tyndalo 1974). Coprinus comatus reportedly has produced these symptoms in certain individuals (Dearness 1911; Fischer 1918), although Krieger (1911) questions the veracity of the identification of the mushrooms in question.

The Upper Michigan residents with whom I discussed Coprinus species referred to two types: Inky caps (Coprinus atramentarius and C. micaceus) and shaggy manes (Coprinus comatus). Therefore I shall consider them in a similar manner.

Coprinus atramentarius (Bull. ex Fr.) Fries

Inky cap

Coprinus micaceus (Bull. ex Fr.) Fries

Inky cap

Mica cap (Smith & Smith 1963)

Inky caps have been collected for food (Agnoli; Georgevich; Gill, S.). They must be cooked soon after collection or autodigestion will occur.

Coprinus atramentarius occurs where there are accumulations of organic matter, and Coprinus micaceus occurs in clusters or large groups around stumps of hardwood trees. Both species fruit during the spring through the fall (Bartelli 1976b; Graham 1944; Groves 1962; Kauffman 1918; Krieger 1936; Miller 1972; Smith, A. 1963; Smith & Smith 1963).

Coprinus comatus (Müll. ex Fr.) S. F. Gray

Shaggy mane

Shaggy manes have been collected for food, being eaten after they have been sauteed in butter, or in soup (De Genaro; Gill, S.; Tredway).

Shaggy manes have been most frequently found during the fall in lawns, along woodland paths, and along roadsides (Bartelli 1976b; Christensen 1968; Graham 1944; Groves 1962; Kauffman 1918; Krieger 1936; Miller 1972; Mullendore 1972; Smith, A. 1963; Smith & Smith 1963).

Family Strophariaceae

Naematoloma Karsten

The people interviewed did not generally distinguish between the two species listed here; therefore they will be considered together.

Naematoloma capnoides (Fr.) Karsten

[= *Dryophila capnoides* Quélet]

[= *Hypholoma capnoides* Kummer]

Stump mushroom

Naematoloma sublateritium (Fr.) Karsten

[= *Dryophila sublateritia* Quélet]

[= *Hypholoma sublateritium* Quélet]

Brick cap

Brick-top

Stump mushroom

These mushrooms have been used for food by some Upper Peninsula residents (Comment; Gill, S.; Snitgen, D.; Snitgen, M.). Two people stated that they thought eating brick caps and drinking a relatively small amount of alcohol (equivalent to one or two 12 oz. cans of beer) would cause those who did this to become "high" (intoxicated) to a degree that could not be explained by the alcohol alone (Bennett, R.; Wahla). No accounts of this type of intoxication involving *Naematoloma* species were uncovered in the literature.

These species occur in cespitose to gregarious groups usually during September and October in Upper Michigan (Gill, S.). Naematoloma capnoides grows on conifer wood and Naematoloma sublateritium on decaying hardwood logs (Bartelli 1976a; Graham 1944; Groves 1962; Miller 1972; Smith, A. 1951, 1963).

Psilocybe

Magic mushrooms

Three Upper Peninsula residents specifically mentioned having used these mushrooms (Psilocybe spp.) as an intoxicant (hallucinogen). Many more people than these three are aware of this possibility, however, and some of these people indicated a desire to try "psilocybin" mushrooms while others felt this would be too dangerous. None of the users collected these mushrooms themselves in Upper Michigan; in all cases they were apparently imported from outside of the area (Confidential communications: "Magic mushrooms").

It was not possible to confirm the identity of the mushrooms; therefore it is possible that they may have belonged to another group such as the genus Panaeolus, which may also produce intoxication with hallucinations (Christensen 1975; Fischer 1918; Groves 1962; Krieger 1936; Miller 1972; Murrill 1910; Simons 1971; Thasnakorn 1975).

Toxins reported from the genus Psilocybe include psilocybin and psilocin (Miller 1972; Simons 1971;

Thasnakorn 1975). These toxins have also been reported from some species of Conocybe (Simons 1971; Thasnakorn 1975), Copelandia (Fiussello & Ceruti Scurti 1972b), Panaeolus (Fiussello & Ceruti Scurti 1972a, 1972b; Simons 1971; Thasnakorn 1975), and Stropharia (Simons 1971; Thasnakorn 1975). At least 25 species scattered in these five genera contain these toxins (Simons 1971). Ingestion of as small a dose as 20 to 25 μg. produced a hallucinogenic effect equal to a similar dose of LSD (Thasnakorn 1975). As little as 5 mg. of Psilocybe cubensis (Earle) Singer (= Stropharia cubensis Earle) can cause visual hallucinations in 15 minutes (Miller 1972). Miller (1972) stated that large quantities could be fatal. The only treatment recommended by Simons (1971) is administration of chlopromazine to terminate the hallucinations.

Family Boletaceae

The Bolete Family

Several of the edible species of this family, including species of Boletus, Leccinum, and Suillus, have been used for food by Upper Michigan residents (Comment; Gill, S.; Holmgren; Koenig; Miroslav), especially those who are immigrants from Europe (Gill, S.). Boletes have been used freshly cooked, pickled (Miroslav), or may be canned, frozen, or dried (Bartelli 1976c).

In most cases the people interviewed could not identify the boletes they have used to a Latin binomial with any

degree of certainty. This is not surprising considering that there are over 200 different species recorded from Michigan (Smith & Thiers 1971) and that most field guides discuss less than four dozen species (Groves 1962; Miller 1972; Smith, A. 1963). Because of this identification problem, some people have avoided the use of boletes for food purposes (Georgevich).

This family contains several poisonous species (Bartelli 1976c; Fischer 1918; Smith, A. 1963); those that stain blue or have red tube mouths or both should be avoided (Miller 1972).

Boletes have been found in many diverse habitats, especially wooded areas (Bartelli 1976c; Smith & Thiers 1971), and are most common during hot wet weather during the summer, and rainy periods later in the season (Smith, A. 1963).

Order Cantharellales

Family Cantharellaceae

The Chanterelle Family

Cantharellus Fr.

Chanterelles

The chanterelle mushrooms have been avidly sought by those who know them. Based on descriptions given by people interviewed, specimens collected for food may include more than a single species. The fruiting bodies have been used in sauces or sauteed in butter (Georgevich; Gill, S.; Comment).

The fruiting bodies may be collected during the summer and early fall in deciduous, mixed, and coniferous forests. In Marquette County they have been found under pines (Pinus spp.) and balsam fir (Abies balsamea) during the summer (Bigelow 1974; Gill, S.; Graham 1944; Groves 1962; Kauffman 1918; Krieger 1936; Miller 1972; Smith, A. 1963).

Order Aphyllophorales

Family Polyporaceae

The Polypore Family

The polypores have been variously classified into one family (Polyporaceae) or several families (Webster 1970). The polypores have been treated as one family in this paper as this most closely agrees with the way these fungi have been considered by the Upper Michigan residents who were interviewed as a source of data for this work.

Since many members of this family have large woody fruiting bodies, they have been more frequently used for decorative items than for food. Only two species were reported as being used for food by the interviewees, although no information was discovered which indicated that any members of this family are poisonous. Most species are either too woody or leathery to be suitable for use as food (Gill, S.).

These are perhaps the most obvious group of fungi during the course of a year. Many species produce fruiting bodies which persist until the following season or longer,

and thus would tend to attract the attention of those who spend time in wooded areas (Gill, S.; Groves 1962).

Ganoderma applanatum (Pers. ex Wallr.) Pat.

[= Fomes applanatus (Wall.) Pers.]

Artist's fungus

Artist's conk

Ganoderma applanatum has frequently been collected for use as a decorative item in homes and camps (Brebner; Georgevich). I have used the caps to produce a brown dye, which was extracted from the caps by soaking them in an aqueous solution of sodium carbonate for several days, then boiling the caps in this same solution for a half hour. Porcupine quills were then added to the solution and simmered until the desired color was achieved. I know of no one who uses Ganoderma applanatum in this manner besides myself, although Vivian Glass is aware of the possibility of using fungi for this purpose, and another woman indicated that she planned to try using this fungus to dye some cloth.

One to several perennial pilei of this fungus may be found on logs or stumps in almost any forest, but especially on hardwoods (Miller 1972; Smith, A. 1963). The fresh, white undersurfaces of the pilei stain brown when injured (Bigelow 1974; Krieger 1936; Miller 1972; Smith, A. 1963).

Ganoderma tsugae Murr.

[= Polyporus tsugae (Overh.) Murr.]

Occasionally the mature pilei have been collected for use as decorative items in homes, and more frequently, camps or cottages (Georgevich).

The immature pilei of Ganoderma tsugae have been collected as food (Brebner; Georgevich; Gill, S.; Snitgen, D.; Snitgen, M.), although there is no evidence of this usage prior to May, 1975 (Bartelli, Gill, S.). At the time of this writing, only five people are known to have collected this fungus for food,[4] and nine people are known to have eaten the cooked immature pilei, all with no apparent ill effects.[5] I have also eaten small quantities of the pilei uncooked, again with no known ill effects.

Since the history of Ganoderma tsugae's use for food is known, it has been included here. As far as is known, Ganoderma tsugae was first collected for use as food from

[4]Ganoderma tsugae has been collected for food by the following individuals. Year dates indicate the seasons in which they collected the fungus. Brebner, Robert 1977; Georgevich, Militza 1977; Gill, Steven 1975, 1977; Snitgen, Donald & Snitgen, Mary 1975, 1976, 1977.

[5]The nine people who are known to have eaten the immature pilei are listed with the dates of use. Brebner, Robert 1977; Buckmaster, Marla 1977; Georgevich, Militza 1977; Gill, Janice 1975; Gill, Steven 1975, 1977; Hoff, Lydia 1977; Snitgen, Donald & Snitgen, Mary 1975, 1976, 1977; Tredway, Alice 1977.

decaying hemlock (Tsuga canadensis) logs at Presque Isle Park in Marquette in May, 1975, by Donald and Mary Snitgen and myself. The immature pilei were not known to be edible at the time of collection, but none of the collectors knew of any poisonous polypores. Before the pilei were eaten, several mushroom field guides were consulted as well as Dr. Merry of Northern Michigan University's Department of Biology, none of which indicated that there was any known danger of poisoning from members of the Polyporaceae. Therefore small portions were cooked and tried as food. As none of us suffered any ill effects, larger portions were eaten, and several other people have been given this information, many of whom have become avid collectors of this fungus for food.

Several mushroom field guides and manuals have been consulted concerning the edibility of Ganoderma tsugae. This fungus was either not listed, listed as inedible, or of edibility unknown by these works.[6]

Ganoderma tsugae grows on stumps and logs of conifers, especially hemlock (Tsuga canadensis) (Graham 1944; Groves 1962). The upper surfaces of the tough mature pilei are

[6]The following publications were consulted regarding the edibility of this species, none of which listed it as edible: Bartelli 1976a; Bigelow 1974; Christensen 1968; Graham 1944; Groves 1962; Homola 1973; Korhonen 1973; Krieger 1936; Lange & Hora 1963; Miller 1972; Rinaldi & Tyndalo 1974; Smith, A. 1963; Smith & Smith 1963; Tuomikoski 1958; Зерова & Бассер 1972).

usually dark red with a shellacked or varnished appearance, whereas the young fruiting bodies are tender, creamy white structures, the flesh turning tough and corky as they mature. The red shellack-like coating advances from the base to the edge of the pileus in a series of bands, first yellow, orange, and then red; these bands correspond to the toughening of the tissue. In Marquette County, the immature pilei are usually available for about three weeks in late May to early June, although they have been found as late as the end of June. The mature caps may be found throughout the summer and fall and often persist into the following spring (Gill, S.).

Lateiporus sulphureus (Bull. ex Fries) Bondarzew & Singer

[= Polyporus sulphureus (Bull.) Fries]

[= Grifola sulphurea]

Sulphur shelf

Sulphur mushroom

Chicken mushroom

In Upper Michigan, people have collected Lateiporus sulphureus for food use (Bartelli; Comment; Gill, S.). The edible portion consists of the tender margin of the growing caps (Bartelli 1976a; Gill, S.; Miller 1972; Smith, A. 1963; Smith & Smith 1963).

The pilei of this fungus occur from early summer through fall both on stumps and logs and from buried wood of a variety of hardwoods and conifers, especially oak

(Quercus spp.) (Bartelli 1976a; Gill, S.; Groves 1962; Krieger 1936; Miller 1972; Smith & Smith 1963).

Piptoporus betulinus (Bull. ex Fr.) Karst.

[= Polyporus betulinus Bull. ex Fr.]

In Upper Michigan the pilei of Piptoporus betulinus have been collected as a decorative item for dwelling places (Georgevich).

This fungus grows only on birches (Betula spp.). While the pilei may persist into the following season, fruiting usually occurs from May to November (Gill, S.; Graham 1944; Groves 1962; Krieger 1936).

Family Hydnaceae

The Teeth Fungi Family

Hericium

There are several rather similar species in this genus, and it is not certain whether or not some are just ecological forms (Groves 1962). The two species listed below are difficult to differentiate and may possibly be variations of one species (Miller 1972).

Hericium caput-ursi

[= Hydnum caput-ursi Fries]

Bear's head fungus

Hericium coralloides (Scop.) Pers.

[= Hydnum coralloides Scop.]

Coral fungus

Hericium species have been used for food by some Upper Michigan residents (Fairclough; Gill, S.; Snitgen, D.; Snitgen, M.).

These fungi are found on the wood of both deciduous trees and conifers (Miller 1972; Smith, A. 1963), but more commonly on hardwoods (Bigelow 1974; Graham 1944; Groves 1962; Krieger 1936). In Marquette County the large fruiting bodies have been found as early as the first part of August, but more frequently in September (Gill, S.).

Class Gastromycetes

Order Lycoperdales

Family Lycoperdaceae

The Puffball Family

Upper Michigan residents have collected the young fruiting bodies of several species of puffballs, including Lycoperdon pyriforme Pers., for use as food (Georgevich; Gill, S.; Temple; Wilcox). Those puffballs that at first have a white gleba have all been regarded as edible (Miller 1972; Smith, A. 1963).

Puffballs have been used medicinally by the Indians of this area for stopping nosebleeds. Mrs. Schofield said that puffballs of a type found in cattle pastures were broken open and the spores squirted up the nose to stop the hemorrhaging. Puffball spores were used as a hemostatic by U. S. doctors during the 19th century (Stillé & Maisch 1879), and it is also interesting to note that at least

some puffballs (Calvatia lilacina and C. gigantia) have shown antibacterial activity (Bianco & Ceruti Scurti 1972).

Unidentified Fungi Used in Upper Michigan

Many mushrooms discussed by Upper Peninsula residents could not be identified by a Latin binomial. Several factors contributed to this situation. (1) The spring, summer and fall of 1976 were extremely dry in Upper Michigan, resulting in several species having either poor or no fruitings during 1976; thus often no specimens of a particular mushroom were available for identification when much of my data were collected. (2) It was often impossible to match with any degree of certainty interviewees' descriptions of a particular mushroom type with any descriptions in the literature. (3) Some people, because they had not picked a particular mushroom for several seasons, had poor recall as to its identifying characteristics. (4) The lack of generally recognized and consistently applied common names used to indicate particular taxonomic groups of mushrooms added to the confusion. Some of these common names, such as stump and grass mushrooms, indicate criteria other than taxonomic position, e.g. stump mushroom can refer to all mushrooms that grow on stumps that are edible.

These mushrooms of uncertain taxonomic identity, their taxonomic affinities (if known), their uses, and any other noteworthy information are listed in Table 1.

TABLE 1

UNIDENTIFIED MUSHROOMS

Name	Possible Identity	Use	Notes	Reference
Button Mushrooms	Agaricales	Food		Felt Ekert Wilcox
Grass mushrooms	Tricholomataceae (*Marasmius* sp.?)	Food		Georgevich
Log mushrooms	Agaricales	Food		Georgevich
Mushrooms	Agaricales	Dye: brown for cotton Color extracted in aqueous solution of Na_2CO_3		
	Identification not possible; fruiting bodies from previous season.			Gill, S.
Mushrooms		Food	Uses only those on hardwoods, never those on softwoods (pine, hemlock, etc.)	Arsenault
Oreille de cochon (Pig's ear)		Food		Comment
Pied de moine (Foot of a monk)		Food		Comment
Reddish topped mushroom		Poisonous		Comment
Stump mushroom	*Armillariella mellea*	Food		Agnoli Holmgren
White mushroom	Agaricales	Food		Comment
White mushrooms, pure	Agaricales	Food	Picked by people of Italian descent	Ekert

Lichens

The lichens have been treated as a separate plant division rather than including them with the fungi because this has been the manner in which the Upper Michigan residents who use lichens have regarded them.

Lichens are composed of a fungus and a chlorophytic plant (almost always an alga), living in a symbiotic relationship to each other (Hale 1961). They are frequently found on rock outcrops, tree trunks and branches, decaying logs and stumps, and on poor soils (Gill, S.).

In Upper Michigan and northern Wisconsin people have used lichens for food, medicine, and as a source of dye (Chamberlain 1901; Gill, S.; Michigan Department of Natural Resources 1974; Reagan 1928; Smith, H. 1923, 1932, 1933; Yanovsky 1936). Only the use of lichens as a source of dyes was reported by the people interviewed, although some people are aware of the possibility of using lichens as emergency food.[6]

[6]Note: Parmelia molliuscula Ach. has a reputation of being toxic to livestock. The poisonous principle is usnic acid, which in large doses is lethal to livestock (Kingsbury 1964). Genera containing usnic acid include Alectoria, Arthonia, Buellia, Cetaria, Cladonia, Dactylina, Evernia, Haematomma, Parmelia, Parmeliopsis, Ramalina, and Usnea (Hale 1961). Proper precautions should be taken before attempting to utilize any lichen for food.

Family Cladoniaceae

Cladonia species

Reindeer moss

In Upper Michigan, reindeer mosses may be found on poor soils, especially under jack pines (*Pinus banksiana*) (Gill, S.). Members of this genus have been utilized in indoor "moss" gardens and in other decorative items.

Family Umbilicariaceae

The Rock-Tripe Family

Umbilicaria species

Rock-tripe

These lichens have been used as a source of dyes for wool, mostly by well educated white females involved in weaving, spinning, knitting, and crocheting as an art or craft activity. The colors obtained from these lichens and the processes used are outlined in Table 2. In all cases that were recorded, the dyes were extracted from the lichen with an aqueous solution of ammonia (Gill, S.). For many of the people interviewed, the source of their information was one or another of the natural dye handbooks currently available. In addition to Upper Michigan, *Umbilicaria* species have apparently been used for dyes in many other areas of North America and in Europe (Bolton 1960; Robertson, S. 1973).

TABLE 2

DYES FROM UMBILICARIA SPECIES

Ammonia concentration	Mordants	Dyebath pH	Dyebath: Lichen extract +	Material dyed	Color	Reference
concentrated	none	alkaline	HCl	porcupine quills	magenta red-violet violet-red pink	Gill, S. 1975-76
concentrated	none	neutral	HCl	porcupine quills	red	Gill, S. 1975-76
concentrated	none	acidic	HCl	porcupine quills	orange	Gill, S. 1975-76
dilute	none	neutral-slightly alkaline	---	porcupine quills	orange brick-red	Gill, S. 1975-76
unknown	none	neutral-alkaline	---	wool	magenta red-violet	Beyer Forsberg Vielmetti
concentrated	stannous chloride	acidic	HCl	porcupine quills	rust	Gill, S. 1975-76
concentrated	$FeSO_4$ + oxalic acid	alkaline	---	porcupine quills	maroon	Gill, S. 1975-76
dilute	$FeSO_4$ + oxalic acid	neutral to alkaline	---	porcupine quills	warm brown	Gill, S. 1975-76

TABLE 2 (continued)

Ammonia concentration	Mordants	Dyebath pH	Dyebath: Lichen extract +	Material dyed	Color	Reference
unknown	$Al_2(NH_4)_2(SO_4)_2$	---	---	porcupine quills	pale pink	Gill, S. 1975-76
unknown	alum	alkaline	Iron	wool	purple-brown	Vielmetti

Members of this genus are most frequently found on sheltered granite rock outcrops. They are available any time they are not buried by snow.

Unidentified Lichens

Several other lichens have been used for various purposes in Upper Michigan, as described below. It was not possible to identify these lichens with a Latin binomial as specimens were unavailable for examination.

Maple lung

(This lichen may possibly be a member of the genus Parmelia which is common in the area where Mr. Johnson lived.)

An extract of this lichen is said to be good for coughs and lung disease (Johnson, C. W.), an interesting use as many species of lichens in several different genera and families have exhibited anti-biotic activity (Burkholder & Evans 1945; Burkholder, Evans, McVeigh & Thornton 1944).

Rocky Mountain lichen

(Possibly Evernia or Usnea)

This lichen gives a bright strong chartreuse color to unmordanted wool, and although it does not naturally occur in Upper Michigan, it has been occasionally imported from the western part of the United States (Forsberg; Vielmetti).

Lichens, unidentified by either common or Latin name

Other lichens besides Umbilicaria species and the Rocky Mountain lichen have occasionally been used for dyes by Upper Peninsula residents (Beyer).

Division Bryophyta

Class Musci

Sub-class Sphagnidae

Order Sphagnales

Family Sphagnaceae

The Sphagnum Family

Sphagnum L.

Peat moss

Sphagnum

Several Upper Michigan residents, including Virginia Long's third grade class (Parkview Elementary School, Marquette), were aware that Sphagnum can be used instead of commercial diapers on children (Gill, S.; Long). Arguelles has collected sphagnum moss for this purpose, but it is not known whether or not the moss was actually used for diapering a child. Crum (1976) stated that when used for diapering, sphagnum will apparently even prevent or heal diaper rash.

Some Upper Michigan residents have heard that sphagnum moss can be used as an emergency bandage, although no one reported actually using sphagnum for this purpose. During World War One Sphagnum was used in place of absorbent

cotton in surgical dressings, and was considered superior to absorbent cotton in several respects. (1) Sphagnum pads absorb liquid about three times as fast and (2) in much greater amounts by weight than absorbent cotton. Sphagnum moss will absorb sixteen to twenty-two times its weight in water compared to only five to six times for cotton. (3) Sphagnum pads retain liquids much better than cotton, and (4) they distribute liquids more uniformly throughout their mass. (5) Sphagnum pads are cooler and less irritating (Hotson 1918, 1921a, 1921b; Nichols 1918).

These robust mosses grow in wet habitats, particularly bogs, and are available when not buried by snow (Crum 1976; Gill, S.). Crum (1976) lists twenty-two species from Michigan.

Division Arthrophyta

Order Equisetales

Family Equisetaceae

The Horse-Tail Family

Equisetum L.

Horsetails

Scouring rushes

Snake grass

Horsetails have been used as a source of dye for wool (Beyer; Vielmetti). For colors obtained with various mordants by Upper Peninsula residents, see Table 3 below.

TABLE 3

DYES FROM EQUISETUM

Mordant	Color	Reference
Unknown	yellows, green	Beyer 1977
Alum	light yellow	Vielmetti 1976
Copper	green-tan	Vielmetti 1976

In Marquette during the 1960's some male children about 10 to 13 years in age smoked the hollow internodes of the fertile stems of some Equisetum species. The internodes (usually about 4 to 5 mm. in diameter), which were probably of Equisetum hyemale L., were separated from each other before use (Gill, S.).

The more robust Equisetum species have been used by campers to scrub dishes and pans (Gill, S.).

Equisetum species grow in various habitats, including roadsides, sandy areas, wet areas, and wooded areas (Billington 1952; Gill, S.; Gleason, H. 1952). Ten species are found in Upper Michigan (Billington 1952).

Division Lycophyta

Order Lycopodiales

Family Lycopodiaceae

The Club-Moss Family

Lycopodium L.

Club-moss

Ground-pine

Lycopodium

Lycopodiums reportedly have been used in making wreaths and other Christmas decorations (Gill, S.) although they have been protected by law in Michigan (Burroughs n.d.).

These plants grow most frequently in wooded areas. Billington (1952) lists ten species for Michigan.

Division Pterophyta

Order Filicales

Family Polypodiaceae

The Fern Family

Pteridium aquilinum (L.) Kuhn

Bracken

Brake

The fiddle-heads of bracken have been used both raw and after cooking for food in Upper Michigan (Davis; Georgevich; Gill, S.; Niemi; Robertson, E.; Spyker), and bracken has also been used as a source of dye, giving wool mordanted with alum a light tannish yellow color (Vielmetti).

Despite the use of bracken in the United States and other countries for food, several toxic properties of the plant have been discovered. Pteridium aquilinum has been found to contain thiaminases (Evans, W. C. & Jones 1952; Evans, W. C., Jones, & Evans, R. A. 1950; Kingsbury 1964),

to cause photosensitivity (Wherry 1942), and to cause a radiomimetic poisoning (Evans, I. A. & Howell 1962; Evans, I. A. 1968). Bracken has been found to be carcinogenic in several different species of animals (Anonymous 1965; Evans, I. A. 1968; Evans, I. A. & Mason 1965; Hirono, Shibuya, Fushimi & Haga 1970; Hirono, Shibuyu, Shimizu & Fushimi 1972; Miyakawa & Yoshida 1975; Pamukcu, Ertürk, Price & Bryan 1972; Pamukcu, Göksoy & Price 1967; Pamukcu & Price 1969; Price & Pamukcu 1968). The curled tops, the part most popular for food use, have specifically been shown to be carcinogenic (Hirono, Fushimi, Mori, Miwa & Haga 1973). Studies have indicated that the carcinogenic substance in bracken is shikimic acid (Evans, I. A. & Osman 1974) and/or a tannin (Wang, Chiu, Pamukcu & Bryan 1976). Bracken ferns have also been shown to have embryotoxic effects in mice (Yasuda, Kihara & Nishimura 1974).

Division Coniferophyta

Order Coniferales

Family Pinaceae

The Pine Family

Abies balsamea (L.) Miller

Balsam

Balsam fir

Balsam pitch has been used by people of European descent for treating kidney ailments by placing a small drop of the pitch in warm water and then drinking the

solution, and for treating sores on the skin (Carter). The pitch has also been used by Potawatomi Indians living on the Hannahville Reservation to treat ear-aches by placing the pitch in the infected ear (Dees), and by Ojibwa Indians for treating carbuncles and diphtheria, for which the resin was allowed to trickle down the throat [inside] (Gauthier, R.). According to Mr. Gauthier, the resin was collected from the blisters found in the bark by puncturing them with a knife and allowing the resin to run onto a spoon or into a jar for storage. The blisters are reportedly full during the full moon and empty during the new moon.

Balsam fir has been popular for use as Christmas trees in Upper Michigan (Gill, S.).

This tree is most common where there is cool, moist, rich soil, occurring in low swampy areas and on well drained hillsides (Otis 1931), both in coniferous and mixed stands throughout Upper Michigan (Voss 1972).

Larix laricina (Du Roi) Koch

Tamarack

A wash made by boiling pieces of young tamarack in water has been used for treating cuts and open sores, the pounded inner bark has been used as a poultice (St. Arnold), and a tea has been made from the slivered inner bark which was drunk as a treatment for rheumatism (Gauthier, M.; Gauthier, R.) by the Ojibwa Indians.

This tree prefers cold, deep swamps (Otis 1931) and sphagnum bogs, and is found throughout Upper Michigan (Voss 1972).

Picea A. Dietr.

Spruces

Hardened spruce pitch has been used by people of both Ojibwa and European descent as chewing gum (Gauthier, R.; Gill, S.; Vissering). Spruce pitch has also been used by the Ojibwa Indians to make a poultice for carbuncles (Gauthier, R.), and by woodsmen to heal cuts (De Genaro).

Rubin Oliver said spruce bark can be used to make a yellow dye for black ash used in baskets. This was apparently done by Ottawa and/or Potawatomi Indians.

Spruces have been popular for use as Christmas trees and for making other Christmas decorations (Gill, S.).

These trees occur where there is rich moist soil (Gleason, H. 1952; Otis 1931). Two species are native to Upper Michigan, Picea glauca (Moench) Voss (white spruce) and P. mariana (Miller) BSP (black spruce). They both occur throughout the Upper Peninsula (Voss 1972).

Pinus L.

Pines

The Ojibwa have used pine pitch which was rubbed off trees and mixed with sugar for treating coughs (St. Arnold), and boiled pitch [apparently applied as a salve or poultice] for treating boils. Davis said that when she was a girl a

priest from Marquette was cured of a nose problem by sleeping on a pillow case filled with pine needles, and that this treatment is also good for people with other respiratory ailments such as tuberculosis and asthma.

Pines have also been used for Christmas trees and decorations (Gill, S.).

Three pine species (Pinus banksiana Lamb., P. resinosa Ait., and P. strobus) are native to Upper Michigan. They are found throughout the Upper Peninsula (Voss 1972).

Pinus strobus L.

White pine

White pine needles have been used to make tea for use as a beverage (Naegele 1974) and cough medicine (Georgevich), and the cambium has been used for food (Vissering).

The bark has been "officially" used in the United States to make cough remedies (Krochmal, A. & Krochmal, C. 1973; Krochmal, A., Walters & Doughty 1971). When compared by weight, white pine needles reportedly contained five times the vitamin C of lemons and a "good" amount of vitamin A (Gibbons 1966).

White pine often can be found in coniferous and mixed forests, in sandy soil, and in swampy areas throughout Upper Michigan (Voss 1972).

Tsuga canadensis (L.) Carr.

Hemlock

The bark has been used to tan leather and to produce a "henna" [reddish-brown] dye (Temple), and a brown dye for use on wool (Beyer). The bark has also been boiled with [steel] traps to remove the human scent (Beyer).

The new shoots have been used to make tea by the Ojibwa Indians (Gauthier, M.). I have also used the needles to make tea and to flavor soups.

Hemlock occurs throughout Upper Michigan, typically growing with beech, maple, and yellow birch, and often white pine (Voss 1972), preferably in moist soil (Gleason, H. 1952).

Family Cupressaceae

The Cypress Family

Thuja occidentalis L.

Arbor vitae

Cedar

Northern white cedar

White cedar

A light tan dye for wool has been obtained from cedar bark, the wool reportedly maintaining the cedar smell after dyeing (Beyer).

The branches have been used to make wreaths and other decorations for Christmas (Gill, S.).

Thuja occidentalis occurs along streams and on rock outcrops, and is the tree characteristic of "cedar swamps" which may be found throughout Upper Michigan.

Division Anthophyta

The Division Anthophyta, or the flowering plants, have provided most of the plants used by Upper Michigan residents, which is not surprising considering the degree to which this Division dominates our flora. Both native and introduced species occur, many of which have been readily used by Upper Michigan residents regardless of ethnic background.

As with the fungi, there are folk sayings associated with collecting and determining the edibility of flowering plants, although my data indicated that these beliefs are not as widespread concerning the flowering plants as they are concerning the fungi. One particular saying I remember from childhood is that red berries (and black berries?) are edible, whereas all blue berries except blueberries [Vaccinium spp.] and all white berries are poisonous, a rule that has some truth to it but also some exceptions.

It is interesting to ponder how some of the plants used for food were first discovered (e.g. acorns, stinging nettles, marsh-marigold), since the first experiences with many must have been at least unpleasant if not worse. The discovery of many medicinal plants probably was on a trial and error basis, although at least some people claim to

have received knowledge of medicinal plants from supernatural sources. The use of plants for dyeing purposes has been perhaps the most "scientific" — a plant is tested for the presence of dye; if it has some it is retained; if not, discarded.

Upper Michigan residents have been quick to adopt any new information concerning useful plants, more or less regardless of the source.

Class Monocotyledonae

Order Pandanales

Family Typhaceae

The Cat-Tail Family

Typha L.

Bull-rushes (Robertson, E.)

Cat-tails

Two species, Typha latifolia and T. angustifolia, have been found in Upper Michigan. Specimens which appear to represent the hybrid between these two species, known as Typha x glauca Godron, have been reported from Schoolcraft County (Voss 1972).

Typha angustifolia L.

Narrow-leaved cat-tail

Typha latifolia L.

Cat-tail

Those people with whom cat-tails were discussed did not distinguish between these two species. Most plants used

probably have been Typha latifolia, as this species is much more abundant than Typha angustifolia in Upper Michigan (Gill, S.; Voss 1972).

Cat-tails are versatile food plants; the rhizomes ("roots"), lower portions of the shoot, young leaves, female and male flowers, and pollen have all been used for food by Upper Michigan residents (Brebner; Georgevich; Gill, G.; Gill, S; Naegele 1974; Olson; Robertson, E.; Temple; Wilcox), and the "roots" (rhizomes) have been used for medicinal purposes (Temple).

The various cat-tail parts are available for food use in Upper Michigan at the following times: rhizomes in the spring and fall, shoots in the spring, flowers in late June and early July, and the pollen in early July (Gill, S.).

Cat-tails are a productive wild food plant. Claassen (1919) estimates that an acre in a moderately thick patch of cat-tails would yield 10,792 pounds dry weight of rhizomes, 60%, or 6,475 pounds, of which are the starchy central core. Claassen found that 10 to 15% of this core was fibrous material, leaving 5,500 pounds of flour per acre.

Upon analysis, this flour was found to have the composition shown in Table 4.

Cat-tails occur in all types of wet and intermittently wet habitats and are frequent found in roadside ditches,

forming extensive stands when conditions permit (Gill, S.; Voss 1972).

TABLE 4

COMPOSITION OF CAT-TAIL RHIZOME FLOUR[1]

Constituent	Per cent[2]
Moisture	8.1
Ash	2.7
Fat	2.8
Protein	7.5
Carbohydrates	80.

[1]After Claassen 1919.

[2]Percentages are an average of Claassen's data. I rounded the figures to two digits. (Percentages add up to equal 101.1%.)

Order Graminales

Family Poaceae [Gramineae]

The Grass Family

Hierochloë odorata (L.) Beauv.

Sweet grass

Sweet grass has been used in the construction of baskets and burned as an incense by Indians, including those from the Hannahville Reservation (Potawatomi and some Ottawa) (Dees; Oliver; Voss 1972). Sweet grass is a spiritual plant to the Indians. According to Bowden, when seen at a distance, it dances. "It looks like several

little mirrors sparkling. When you get close, it stops dancing."

Sweet grass grows at the edges of woods and shores, in meadows and in boggy places, usually where it is moist (Voss 1972).

Triticum aestivum (L.)

Wheat

Ludlow considers the juice extracted from young wheat shoots to be especially healing, but did not specify for which maladies. Based upon the investigator's literature review and information from those Upper Michigan residents interviewed, the concept of using wheat juice for this purpose was introduced into the area as a consequence of persons attending the Hippocrates Health Institute[7] (Ludlow) or a workshop conducted by the Institute in Marquette during March, 1977.

Wheat is a cultivated plant originally from Eurasia (Gleason, H. 1952). The wheat shoots used by Ludlow were grown from commercial seed.

Zea mays L.

Corn

Tredway stated that eating corn will improve one's hair and keep it from falling out.

[7]Wigmore, Ann, Director, Hippocrates Health Institute, Boston, Massachusetts.

Corn is only a cultivated plant, probably originating in Mexico (Voss 1972).

Zizania aquatica L.

Wild rice

Although many people know about wild rice, only one person mentioned collecting it in Upper Michigan (Bills). Wilcox related a folk tale that wild rice hulls can get into the skin and then the blood.

This plant prefers shallow water (seldom over two feet deep) in rivers, streams, lakes, and ponds, growing best in water where there is at least a slight current over a muddy, silty, or mucky bottom, and where there is little competition from other plants. Many present day stands of wild rice probably represent areas which were at one time sown by humans (Gill, S.; Voss 1972). This plant is not common in Marquette or Alger Counties (Gill, S.).

Order Arales

Family Araceae

The Arum Family

Acorus calamus L.

Calamus

Sweet-flag

The rhizome of sweet-flag has been used as a "nibble"[8] (Vissering). The plant was considered medicinal by some

[8]A nibble is a term applied to parts of plants which are collected in small quantities on location and usually consumed immediately.

Upper Michigan residents, and has been traded into the area between various Indian groups (Gill, S.). Oil of calamus was banned in 1968 by the Food and Drug Administration after it produced cancer in experimental animals (M., J. F. 1975).

Sweet-flag is localized in wet open places, marshes, swales, and the edges of rivers and creeks, and about the edges of beaver dams. The plant is not common and I have not found it in Marquette or Alger Counties (Gill, S.; Voss 1972; Vissering).

Order Xyridales

Family Bromeliaceae

The Pineapple Family

Ananas comosus

Pineapple

Tredway states that fresh pineapple consumed for three days will rid one of all parasites.

Pineapple is a cultivated plant which is imported into Upper Michigan commercially.

Order Liliales

Family Liliaceae

The Lily Family

Allium L.

Onions

This genus has been considered "good for the blood" by some Upper Michigan residents, and wild onions are

popular as food items[9] (Vissering).

Allium cepa L.

Onion

Onions have been used medicinally for poultices (Temple), for treating bruises (Georgevich), and for ear-aches (Nowell). To treat an ear-ache, Nowell stated that a small onion was roasted, peeled to the size of the little finger, and placed into the affected ear.

Onion skins have been used as a source of dye, both for eggs which were boiled with yellow onion skins to give the shell and albumen a golden color (Georgevich), and for wool. Table 5 lists dyes obtained from onions for use on wool.

This species is probably a native of southwest Asia, and is the cultivated onion of commerce (Gleason, H. 1952).

Allium sativum L.

Garlic

Garlic has been used medicinally for treating the symptoms of the common cold (Ekert) and high blood pressure (Van Able). Tredway stated that a melanoma was cured by putting a slice of garlic on the lesion every day until it disappeared.

[9]Moderate or large quantities of raw or cooked onions (Allium cepa) in the diet can cause severe anemia in dogs, cattle, and horses (Kingsbury 1964).

A cultivated species native of west Asia (Gleason, H. 1952), garlic is obtained by Upper Michigan residents from commercial sources.

TABLE 5

ONION DYES

Onion variety	Mordant	Color	Reference
Unknown	Unknown	Yellow	Temple
Unknown	Alum	Maize	Forsberg
Unknown	Alum, indigo over dyed	Pine green	Forsberg
Unknown	Tin	Orange-yellow	Forsberg
Red	Alum	Gold	Vielmetti
Red	Chrome	Gold	Vielmetti
Yellow	Alum	Warm brown	Vielmetti
Yellow	Chrome	Greenish gold	Vielmetti
Yellow	Copper	Reddish brown	Vielmetti
Yellow	Iron	Brown	Vielmetti
Yellow	Tin	Orange-gold	Vielmetti

Allium tricoccum Aiton

Leeks

Ramps

Wild leeks

Leek bulbs and leaves, which contain 80 mg. of ascorbic acid per 100 g. of leaves (Zennie & Ogzewalla

1977), have been gathered for food by Euro-Americans and Ojibwa Indians (Brebner; Davis; Felt; Gauthier, R.; Georgevich; Gill, G.; Gill, S.; Grieninger; Holmgren; Le Maire; Ludlow; Naegele 1974; Robertson, E.; Spyker; Tredway). According to Mr. Gauthier, it is possible to prepare leek seasoning by squeezing juice from leeks [bulbs] collected in the spring. When placed in a jar, this juice reportedly will turn "white and hard like lard," and can be used as a leek seasoning. Medicinally, leeks have been used to treat high blood pressure (Davis; Felt).

Leeks are found in rich deciduous woods, both on upland areas and floodplains of rivers and streams, especially in moist maple-beech-hemlock stands throughout Upper Michigan (Voss 1972).

Leek leaves are available in May and early June, and the bulbs are available throughout the year whenever the ground is not solidly frozen and the snow is not too deep, although they are most frequently collected in the spring (Gill, S.).

Aloe vera

Aloe

Aloe has been highly esteemed as a burn remedy by local residents (Anonymous; De Genaro; Effie; Ludlow). The juice is applied to the burned area or a leaf is sliced lengthwise and used as a compress (Gill, S.).

Aloes are imported plants, sometimes cultivated in the home (Gill, S.).

Asparagus officinalis L.

Asparagus

Young wild asparagus shoots have been collected for food (Felt; Naegele 1974; Olson) during the early spring.

A native of the Old World, asparagus is widely escaped from cultivation (Voss 1972).

Clintonia borealis (Aiton) Raf.

Blue-bead lily

Clintonia

Corn lily

According to Niemi, Clintonia borealis fruit have been eaten by children without any apparent ill effect. Clintonia is widespread in mixed, coniferous and deciduous forests on sandy and richer soils throughout the Upper Peninsula (Voss 1972). The fruits are generally available in August (Gill, S.).

Convallaria majalis L.

Lily-of-the-valley

Lily-of-the-valley [leaves] have been used as a source of natural dye (Vielmetti). See Table 6 for colors with respective mordants.

A cultivated ornamental in our area, lily-of-the-valley has occasionally escaped near gardens and cemeteries (Gleason, H. 1952; Voss 1972).

TABLE 6

DYES FROM LILY-OF-THE-VALLEY
(Vielmetti)

Mordant	Color
Alum	light tan
Alum	very pale green-tan
Copper	light tan
Tin	light tan

Family Iridaceae

The Iris Family

Iris L.

Blue flag

Wild iris

Arguelles reported that this plant was a panacea, useful in treating cuts and abrasions, and that it acted on the kidneys and was cathartic. According to a Lansing, Michigan, resident, blue flag roots that were dried for a prolonged period were chewed by Indians to produce numbness in the throat so they could "sing day and night" [at festivals]. Used raw, it reportedly has acted as an emetic (De Land).[10]

Iris versicolor L. is our most common species, being found in wet places throughout Upper Michigan (Voss 1972).

[10]Iris species are considered toxic (Kingsbury 1964; Muenscher 1951).

Class Dicotyledonae

Order Myricales

Family Myricaceae

The Bayberry Family

Comptonia peregrina (L.) Coult.

[= Myrica asplenifolia L.]

Sweet-fern

The nutlets of sweet fern have been eaten as food and the leaves have been used to make tea (Gill, S.; Naegele 1974).

Sweet-fern grows in dry sandy soils (Billington 1949) and is very common under jack pine (Pinus banksiana) (Gill, S.) and in open areas (Fernald 1970). The leaves are available from late spring to early fall.

Myrica gale L.

Sweet gale

Sweet gale leaves have been used for tea (Gill, S.) and smoked as kinnick-kinnick, the effects, if any, being mild (Confidential Communications: Kinnick-kinnick).

Sweet gale can be found in marshes, bogs, and along lakes and streams throughout Upper Michigan (Billington 1949; Gill, S.). The leaves are available during the summer and early fall.

Order Juglandales

Family Juglandaceae

The Walnut Family

Juglans nigra L.

Black walnut

Walnut husks and bark (Beyer) have been used as a source of brown dyes by Upper Michigan residents. Indians living in the northern portion of Lower Michigan have used walnut (species and plant part unspecified) to dye black ash, used to make baskets, a brown color (Red Arrow), and the plant may have been used in a similar manner by Upper Michigan basket makers. See Table 7 for mordants, colors, materials dyed, and references concerning walnut husks as they were used for dyeing in this area.

Black walnut is found growing in the wild in Michigan (Gleason, H. 1952) but has not been observed growing wild in Marquette or Alger Counties. Several have been planted in the City of Marquette as ornamentals. The ripe fruit is available during the fall (Gill, S.).

TABLE 7

DYES FROM JUGLANS NIGRA HUSKS

Mordant	Color	Material dyed	Reference
None	orange-brown	wool	Forsberg
None	warm brown	wool	Forsberg; Vielmetti
Chrome	golden brown	wool	Vielmetti
Copper	brown	wool	Vielmetti
Iron	brown-gray	wool	Vielmetti
Tin	greenish brown	wool	Vielmetti
None	warm brown	porcupine quills	Gill, S.
None, $FeSO_4$ after-bath	cold brown	porcupine quills	Gill, S.
$FeSO_4$ & oxalic acid	dark gray	porcupine quills	Gill, S.
None	neutral brown	black ash	Gill, S.

Order Fagales

Family Betulaceae

The Birch Family

Alnus B. Ehrh.

Alders

According to Temple, alder bark has been used to produce a red dye, but she did not specify for what material.

Alders are found growing near the edges of rivers, streams, ponds, and lakes, and in swampy areas (Billington 1959; Gill, S.).

Betula L.

Birches

Birch bark has been used as tobacco for smoking (Tredway). Vielmetti has used the inner bark of white birch (probably Betula papyrifera Marsh.) as a source of dye for wool. Used with no mordant or with an alum mordant, the dye gave an orange-tan color.

Birches are found in a variety of habitats throughout Upper Michigan (Gill, S.).

Corylus cornuta Marsh.

[= Corylus rostrata Ait.]

Beaked hazel

Hazelnut

Collected during late summer, hazel nuts have been used for food by Upper Peninsula residents (Gill, G.; Gill, S.; Naegele 1974; Nault; Vissering).

This shrub is widespread throughout Upper Michigan (Billington 1949), especially in moist woods (Gleason, H. 1952).

Family Fagaceae

The Beech Family

Fagus grandifolia Ehrh.

Beech

Beech nuts, which are available in the fall, have been collected for food by Upper Peninsula residents (Gill, S.).

Beech is common in the eastern half of Upper Michigan (Gill, S.).

Quercus L.

Oaks

Acorns, which are available during the fall, have been used for food by Ojibwa Indians (Gauthier, M.). The acorns must be leached to remove the toxic tannin (see Kingsbury 1964 and Muenscher 1951) before being used as food. I found leached (by boiling water) white oak acorns palatable although somewhat bitter to the taste. Acorns have also been used as a source of dye for wool. See Table 8 for details.

TABLE 8

DYES FROM ACORNS
(Vielmetti)

Mordant	Color
None	brown
Chrome	tan
Copper	dark army green
Iron	silver gray

Upper Michigan is part of the northern edge of Quercus' range, although northern red oak (Quercus borealis Michx. f. [Q. rubra]) is common in many areas (see Otis 1931). Some oak species have also been planted as ornamentals. The species of oak used were not indicated by the people who supplied data concerning acorn usage (Gill, S.).

Order Urticales

Family Cannabinaceae

The Hemp Family

Cannabis sativa L.

Grass

Hemp

Marijuana

Marihuana

Pot

Marijuana has been smoked and eaten in baked goods (e.g. brownies and cookies) to produce intoxication [to "get high"]. Although because of marijuana's illegal status it is difficult to estimate the extent of its use, indications are that marijuana's use is very widespread in Upper Michigan (Confidential Communications: Marijuana).

Marijuana contains various toxic resins (mainly tetrahydrocannabinol) (Hardin & Arena 1974) which contribute to the desired effect.

Cannabis sativa is native to Asia and is widely escaped in the United States (Gleason, H. 1952).

It is often illegally imported into Upper Michigan, supposedly often originating in Mexico, Central and South America. Marijuana is also occasionally cultivated illegally in Upper Michigan (Confidential Communications: Marijuana).

Family Urticaceae

The Nettle Family

Urtica L.

Nettles

Stinging nettles

The young tops have been collected for use as a cooked green (Gill, S.; Naegele 1974); the nutritional properties of the leaves are listed in Table 9. Cooking destroys the stinging properties of nettles. Kingsbury (1964) reported that *Urtica chamaedryoides* Pursh contains toxicologically significant amounts of acetylcholine and histamine. A poultice of dock (*Rumex*) leaves has been used to cure nettle stings (Nowell).

Nettles are found near roadside ditches, in moist, rich soil along rivers and streams, and in low areas (Gill, S.).

TABLE 9

NUTRITIONAL PROPERTIES OF NETTLE LEAVES
(Gibbons 1966)

Constituent	Content per 100 g of leaves
Water	84 mg.
Ascorbic acid	76 mg.
Vitamin A	6566 I.U.
Protein	6.9 g.

Order Aristolochiales

Family Aristolochiaceae

The Birthwort Family

Asarum canadense L.

Wild ginger

Wild ginger rhizomes have been used as a seasoning in cooking, a flavoring ingredient in dandelion wine, and have occasionally been candied (Georgevich; Gill, S.).

Wild ginger grows in rich soil in woods and along streams and rivers (Gleason, H. 1952). I have found it in Alger and Ontonagon Counties, and have also seen it in a collection of plants from the Ontonagon area (Paul 1896). This is apparently not a common plant in northern Upper Michigan. The rhizomes are available from early spring until fall (Gill, S.).

Order Polygonales

Family Polygonaceae

The Buckwheat or Smartweed Family

Rheum rhaponticum L.

Rhubarb

Rhubarb root has been used as a purgative and for treating diarrhea (Nowell; Stillé & Maisch 1879). The leaves have been used as a dye to produce a light orange-tan color on wool mordanted with alum (Vielmetti).

A native of Asia (Gleason, H. 1952), rhubarb is a commonly cultivated food plant in many Upper Michigan gardens.

Rumex L. species

Curled dock

Curly dock

Dock

Sorrel

Dock leaves have been used medicinally for treating (i.e. removing the pain) nettle stings by placing the crushed leaves on the affected area (Nowell). If allowed to stand until they have turned bright green before using, the roots of curly dock reportedly give a green dye [to wool] with no mordant (Beyer). Sorrel [leaves] gives a tan dye to wool mordanted with alum (Vielmetti).

Georgevich and I have eaten dock leaves in the spring when they are just uncurling, and Naegele (1974) reports that Rumex crispus L. leaves can be gathered in the spring and used as a pot herb and that the seeds can be ground into flour for baking.

Curled dock leaves compare very favorably with greens such as spinach which have traditionally been considered highly nutritious. See Table 10 for the composition of curled dock leaves.

Members of the genus Rumex may be found in rich soil along streams and in woods, in vacant lots, farmyards, and in pastures and fields. The leaves are considered best for food purposes when collected in the spring (Gill, S.).

TABLE 10

NUTRITIONAL COMPOSITION OF CURLED DOCK LEAVES
(Gibbons 1966)

Constituent	Contents per 100 g of greens
Water	90.9 g
Food energy	28 calories
Protein	2.1 g
Carbohydrates: Total	5.6 g
Carbohydrates: Fiber	0.8 g
Ash	1.1 g
Calcium	66 mg
Phosphorus	41 mg
Iron	1.6 mg
Potassium	338 mg
Vitamin A	12,900 I.U.
Ascorbic acid	119 mg

Rumex acetosella L.

Red sorrel

Sheep sorrel

Sorrel

The leaves of sheep sorrel, with their pleasant sour flavor, have been collected for use in salads (Gill, S.; Ludlow; Naegele 1974).

Sheep sorrel grows in fields and waste places with sandy, acid soils throughout Upper Michigan. Usable leaves

are available during the spring and summer (Gill, S.).

Order Caryophyllales

Family Chenopodiaceae

The Goosefoot Family

Chenopodium album L.

Lamb's quarters

Lamb's tongue

Pigweed

Lamb's quarters (apparently this species) are used as a green vegetable (De Genaro; Georgevich; Gill, C.; Gill, J.; Gill, S.; Grieninger; Ludlow; Naegele 1974; Short), both raw and, more frequently, cooked.

See Table 11 for lamb's quarters nutritional composition, which compares very favorably with such traditional greens as spinach.

This plant is common in gardens and vacant areas throughout Upper Michigan. Lamb's quarters are available as greens from early spring through the summer (Gill, S.).

TABLE 11

COMPOSITION OF LAMB'S QUARTERS
(Gibbons 1966)

Constituent	Contents per 100 g of greens
Water	84.3 g
Food energy	43 calories
Protein	4.2 g
Carbohydrates: Total	7.3 g
Carbohydrates: Fiber	2.1 g
Ash	3.4 g
Calcium	309 mg
Phosphorus	72 mg
Iron	1.2 mg
Vitamin A	11,600 I.U.
Ascorbic acid	80 mg

Family Portulacaceae

The Purslane Family

Claytonia L.

Spring beauties

The uncooked flowers (Gill, S.; Ludlow) and the cooked tubers (Gill, G.; Gill, S.; Naegele 1974) have been used for food. Most readily available in the spring, Claytonia grows in rich, moist woods (Gill, S.; Gleason, H. 1952).

Portulaca oleracea L.

Purslane

Purslane has been used as a leafy vegetable (De Genaro). Table 12 shows the nutritional properties of purslane, which compares favorably with cultivated garden greens.

TABLE 12

NUTRITIONAL COMPOSITION OF PURSLANE
(Gibbons 1966)

Constituent	Contents per 100 g of greens
Water	92.5 g
Food energy	21 calories
Protein	1.7 g
Carbohydrates: Total	3.8 g
Carbohydrates: Fiber	0.9 g
Ash	1.6 g
Calcium	103 mg
Phosphorus	39 mg
Iron	3.5 mg
Vitamin A	2,500 I.U.[1]
Ascorbic acid	25 mg[2]

[1] 6,100 I.U. Vitamin A - Zennie &
8,300 I.U. Vitamin A Ogzewalla 1977

[2] 26 mg Ascorbic acid - Zennie & Ogzewalla 1977

Order Ranales

Family Nymphaeaceae

The Water-Lily Family

Nymphaea odorata Ait.

Pond-lily

Water-lily

This was probably the water-lily used by Davis to make an "air perfume." Water-lily flowers were mixed with orris root and used as an air freshener and a sachet for drawers.

Flowering during the summer, this water-lily is found in quiet waters (Gleason, H. 1952) throughout Upper Michigan.

Family Ranunculaceae

The Crowfoot Family

Caltha palustris L.

Cowslip

Marsh-marigold

The young leaves have been used for cooked greens in the spring (Brebner; Davis; De Genaro; Felt; Georgevich; Gill, G.; Gill, S.; Grieninger; Nadeau; Naegele 1974; Olson; Spyker; Temple), and pickles have been made of the flower buds (Beyer). The leaves are cooked in approximately two changes of water, which removes the volatile toxic factors (see Kingsbury 1964 and Muenscher 1951).

Marsh-marigolds have also been used as a source of dye for use on wool. See Table 13 for details.

TABLE 13

DYES FROM MARSH-MARIGOLDS

Part used	Mordant	Color	Reference
Flowers	Unknown	Yellows	Beyer
Flowers?	Alum	Gold	Vielmetti
Flowers?	Tin	Deep gold	Vielmetti

Marsh-marigolds grow in wet woods and meadows, in swamps, along streams and in springy areas, and in roadside ditches. The greens are available for food use during the spring, flowers during the late spring and early summer (Gill, S.).

Coptis groenlandica (Oeder.) Fern.

[Formerly included in Coptis trifolia (L.) Salisb.]

Goldthread

Medicinally, goldthread has been used by various Indian and Euro-American groups for treating canker sores (Beyer; Gauthier, M.; Gauthier, R.; Gill, S.; Schofield; Shirtz).

Goldthread [aqueous extract] was used by the Ojibwa Indians to wash out babies' mouths if their mouths were sore (Gauthier, M.) or when they were teething (St. Arnold). Naegele (1974) records a similar report from Mrs. St. Arnold in 1973. Schofield stated that goldthread was used as a treatment when a "baby's mouth becomes coated with milk."

The root was boiled and pulled across the baby's tongue to remove this "milk" from it.

A dye for wool has been obtained from goldthread by a few Upper Michigan residents (Beyer; Vielmetti). It produces an orange-yellow color on wool mordanted with alum (Vielmetti).

Goldthread grows in damp, mossy woods and bogs (Gleason, H. 1952). The roots are available whenever the ground is not frozen or covered by snow.

Family Lauraceae

The Laurel Family

Sassafras albidum (Nutt.) Nees

[Including and/or synonymous with

Sassafras officinale (Nees & Eberm.)

Sassafras sassafras (L.) Karst.

Sassafras variifolium (Salisb.) Ktze.]

Sassafras

Sassafras [root] has been used as a beverage tea (Gill, S.; Tredway) and as a tonic (Bowden; De Genaro).

There has been the suggestion that under certain conditions the leaves of sassafras may be carcinogenic (Krochmal, A., Walters & Doughty 1971). The oil in large doses reportedly can produce narcotic poisoning and death (Grieve 1931).

Sassafras used in Upper Michigan has been imported from other areas.

Order Papaverales

Family Papaveraceae

The Poppy Family

Sanguinaria canadensis L.

Blood-root

Blood-root has been used as a source of red dye by [Ottawa] Indians for black ash used to make baskets (Oliver) and the roots have been used by Euro-Americans as a source of orange dye for wool (Beyer).

In Upper Michigan blood-root occurs in rich woods, especially in deciduous and mixed mesic forests.

Family Brassicaceae [Cruciferae]

The Mustard Family

Wild mustard leaves have been used for food (Spyker; Tredway). According to Vielmetti, mustards have been used as a dye for wool. The parts of the plant used for this purpose were not specified. See Table 14 for details of mustard dyes.

Mustards grow in fields, along roadsides, and in disturbed areas.

TABLE 14

DYES FROM MUSTARD
(Vielmetti)

Mordant	Color
None	very pale khaki
Alum	light, dull orange pale peach
Copper	very pale off-white
Tin	pale green-khaki

Nasturtium officinale R. Br.

Water-cress

Water-cress leaves have been used for food by Upper Michigan residents (Brebner; Georgevich; Gill, S.; Naegele 1974), and are comparable to many of the more nutritious cultivated greens. See Table 15 for nutritional properties.

Water-cress, a native to Eurasia, can be found in clear, quiet water (Gleason, H. 1952) in many parts of Upper Michigan.

It is reportedly best collected in the spring (Naegele 1974). I have found water-cress in open spring water during the winter.

TABLE 15

NUTRITIONAL PROPERTIES OF WATER-CRESS
(Gibbons 1966)

Constituent	Contents per 100 g of greens
Water	93.3 g
Food energy	19 calories
Protein	2.2 g
Carbohydrates: Total	3.0 g
Carbohydrates: Fiber	0.7 g
Ash	1.2 g
Calcium	151 mg
Phosphorus	54 mg
Iron	1.7 mg
Potassium	282 mg
Vitamin A	4900 I.U.
Ascorbic acid	79 mg

Order Rosales

Family Rosaceae

The Rose Family

Amelanchier Medic

Juneberries

Service berries

Sugar-plums

Sugar-plums have been used by Euro-Americans and Ojibwa Indians for food as a fresh fruit, cooked fruit, and

for jam (Brebner; Gill, G.; Gill, S.; Naegele 1974; Perket; St. Arnold).

This is an extremely difficult group of plants as far as taxonomy is concerned (Billington 1949). None of the people interviewed had identified any of the Amelanchier used as to species. Sugar-plums grow in various open habitats, especially in non-climax forests such as jack pine (Pinus banksiana) woods (Gill, S.).

Fragaria L.

Strawberries

Strawberry fruits, which are available during June, have been used for food uncooked and in sauces, jams, and jellies (Felt; Gill, G.; Gill, S.; Naegele 1974; Spyker; Temple; Wilcox), and the leaves have been used to make a mild tea (Naegele 1974; Niemi). Temple has used the juice [of the fruit] as a dye or stain. Wild strawberry leaves contain 67 g of water and 229 mg of ascorbic acid per 100 grams of leaves (Gibbons 1966).

Strawberries grow in dry upland woods (Gleason, H. 1952), meadows, pastures and other open areas (Gill, S.).

Potentilla L.

Cinque-foil

Flower tops, probably from a member of this genus, have been used to produce yellow dyes (Beyer).

Many species of Potentilla are found in dry woods, fields, and along roadsides; other species are found along

stream banks and on sandy shores (Gleason, H. 1952). Cinque-foils are available throughout the summer.

Prunus L.

Cherries

Four species of cherry are native to Upper Michigan, all of which have ethnobotanical significance. The fruits have been eaten raw and made into jams, jellies, and wines. The bark has been used for smoking like tobacco (Tredway) and for medicinal purposes.

The leaves and pits of Prunus species can contain dangerous amounts of cyanogenic glycosides and other parts may also have cyanogenic potential (Kingsbury 1964).

Prunus pensylvanica L. f.

Bird-cherry

Fire-cherry

Pin-cherry

The thin fleshed fruit of the pin-cherry, which is available in July and August, has been eaten as a fresh fruit and used for jelly (Brebner; Gill, S.; Temple). Temple also believed that the juice [of the fruit] could be used for dye, but had not tried using it for this purpose.

Pin-cherries grow in woods and forest clearings, and are common throughout Upper Michigan (Otis 1931).

Prunus pumila L.

[as defined in Gleason, H. 1952]

Sand-cherry

Sand-cherries, which are available during the end of July and in August, have been used for food as fresh fruit and as jams and jellies by Upper Peninsula residents (Brebner; Gill, S.; Richardson; Tredway).

I have used sand-cherries as a dye for black ash, after Rubin Oliver's suggestion to use choke-cherries for this purpose. Black ash strips were simmered with sand-cherries and allowed to cool overnight in the liquid, which resulted in dyeing or staining the strips a deep violet-red color.

Prunus pumila occurs on sand dunes along the Great Lakes and on poor, sandy soils inland throughout much of Upper Michigan (Billington 1949; Gill, S.).

Prunus serotina Ehrh.

[= Padus serotina (Ehrh.) Agardh.]

Black-cherry

Black-cherry bark tea has been used as a wash for acne (Wilcox).

This cherry, which is rare in Upper Michigan (Otis 1931), grows in dry woods, along fence-rows and roadsides, on waste land, and along forest margins (Fernald 1970; Gleason, H. 1952).

Prunus virginiana L.

[= *Padus virginiana* (L.) Roemer]

Choke-cherry

Choke-cherry fruits have been used for food, as raw fruit (Brebner; Gill, S.), for jelly (Gill, S.; Temple), to make wine (Gill, L.), and as a dye for wool (Euro-American use). See Table 16 for mordants and colors. According to Rubin Oliver choke-cherries can be used to make a dark wine red dye for black ash used in baskets (Ottawa? Indian use). I have tried dyeing black ash in this manner, but was only able to obtain a violet-red or rose colored cast on the wood.

TABLE 16

DYES OBTAINED FROM CHOKE-CHERRIES
(Vielmetti)

Mordant	Color
Alum	light reddish violet
Chrome	light orange-violet
Copper	light red-violet
Iron	light orange-violet
Tin	violet-blue

Prunus virginiana is common in a variety of habitats throughout Upper Michigan (see Otis 1931), bearing ripe fruit from late July through August.

Pyrus L. subgenus *Malus* (Mill.) Focke

[Apples are sometimes segregated into the genus *Malus* Mill.]

Apples

Pyrus malus L.

[= *Malus sylvestris* Mill.]

Apple

The fruits of these trees, which are available during August and September, have been collected for food, to be used raw and in jellies, pies, and sauces (Anderson, J.; Brebner; Georgevich; Gill, G.; Gill, S.; Naegele 1974).

See Table 17 for the nutritional properties of orchard grown apples. I would expect the fruit of apple trees on abandoned farms to have a similar nutritional composition.

Among some Upper Peninsula residents there is the belief that apple seeds are good for the heart (Georgevich). This belief was introduced from Serbia (Yugoslavia) and possibly other areas. The seeds are cyanogenic and have resulted in at least one human fatality (Kingsbury 1964).

Apple bark has been used to produce a yellow dye for use on wool (Beyer). Crab apples [fruit?] give a light peach color on wool mordanted with alum and a light brown color on wool mordanted with tin (Vielmetti).

Apple trees are common on abandoned farms and escaped from cultivation throughout Upper Michigan (Gill, S.).

TABLE 17

NUTRITIONAL COMPOSITION OF ORCHARD APPLES
(Gibbons 1966)

Constituent	Contents per 100 grams of fruit
Water	84.4 g
Food energy	58 calories
Protein	0.2 g
Carbohydrates: Total	14.5 g
Carbohydrates: Fiber	1.0 g
Ash	0.3 g
Calcium	7 mg
Phosphorus	10 mg
Iron	0.3 mg
Potassium	110 mg
Vitamin A	90 I.U.
Ascorbic acid	4 mg

Rosa (L.)

Roses

Rose petals have been eaten raw (Gill, S.; Ludlow), used in salad (De Genaro; Naegele 1974), and to make jam (Georgevich; Gill, S. 1975). Georgevich makes her jam by cooking the petals in water, adding sugar until the solution spins a thread, and then adding a little lemon juice. The jam is placed in jars which are sealed for storage.

The petals have also been used to make an "air perfume" by mixing them with orris root (Davis, H.).

This is used as an air freshener and as a sachet for scenting the contents of drawers.

Rose hips have been used as a source of vitamin C (Felt), for tea (Georgevich; Naegele 1974; Robertson, E.), sometimes being combined with Labrador tea (Ledum groenlanicum)(Georgevich), and to make jam (Naegele 1974).

Native roses are widespread in Upper Michigan, and roses of various origins are commonly cultivated in gardens (Gill, S.).

Rubus L.

Bramble

This genus is extremely difficult from a taxonomic viewpoint, with possibly as many as 10,000 American microspecies (Gleason, H. 1952). Because of this, and because I was unable to examine most Rubus collections, it was not possible to identify as to species the various members of the genus Rubus used in Upper Michigan. These plants, except for Rubus parviflorus (Thimbleberry), will be discussed under their collective common names.

Rubus species are common throughout Upper Michigan in various habitats, especially vacant lots, fields, and along roadsides and railroads (Gill, S.).

Naegele (1974) recorded uses for Rubus idaeus (fruit: food), Rubus occidentalis (fruit: food, thoroughly dried leaves: tea), and Rubus parviflorus (see species heading for uses).

I tested some Rubus leaves for their dye potential on

porcupine quills after hearing of its use for wool. (Wool and porcupine quills respond in a similar manner to natural dye-stuffs.) The leaves were red-violet in color, and were collected during the fall of 1976. The results of these tests are shown in Table 18. (See Table 22 for Vielmetti's results using dewberries.)

TABLE 18

DYES FROM RUBUS LEAVES

Mordant	Color
2 g ferrous sulfate per liter of water	violet-brown
1 g potassium dichromate per liter of water	yellow

Rubus L. species

Blackberries

Blackberries have commonly been collected for food by many Upper Peninsula residents (Brebner; Felt; Gill, G.; Gill, J.; Gill, S.; Spyker; Temple; Wilcox).

Blackberry wine has been used for medicine for treating diarrhea (Tredway) and for the blood (Georgevich), and Temple said that the juice [of the berry] can be used as a dye.

The nutritional composition of blackberries is shown in Table 19.

TABLE 19

NUTRITIONAL COMPOSITION OF BLACKBERRIES
(Gibbons 1966)

Constituent	Contents per 100 grams of fruit
Water	85.4 g
Food energy	58 calories
Protein	1.2 g
Carbohydrates: Total	12.9 g
Carbohydrates: Fiber	4.1 g
Ash	0.5 g
Calcium	32 mg
Phosphorus	19 mg
Iron	0.9 mg
Potassium	170 mg
Vitamin A	200 I.U.
Ascorbic acid	21 mg

Rubus L. species

Dewberries

Dewberries have been used as a source of dye for wool. See Table 20 for details.

I have no specific references to these fruit being used for food, although I remember hearing people discussing the collection of dewberries for this purpose.

TABLE 20

DYES FROM DEWBERRIES
(Vielmetti)

Part of plant	Mordant	Color
Fruit?	alum	red-violet
Fruit?	copper	brownish red-violet
Fruit?	tin	dark blue-violet
Vines	alum	dull orange

Rubus L. species

Raspberries

Raspberries are commonly used by Upper Michigan residents for food (Brebner; Davis, H.; Felt; Gill, G.; Gill, J.; Gill, S.; Mrva; Spyker; Temple; Tredway; Wilcox).

Raspberries have a nutritional composition as shown in Table 21.

The leaves have been smoked as a tobacco substitute (Tredway).

Raspberry leaf tea has apparently been used medicinally by pregnant women to keep from having spasms and generally for female reproductive system disorders (Georgevich).

A light gold dye on wool mordanted with alum has been obtained from the "vines" [canes] (Vielmetti). The juice of the fruit reportedly can also be used as a dye (Temple).

TABLE 21

NUTRITIONAL VALUE OF RASPBERRIES
(Gibbons 1966)

Constituent	Contents per 100 grams of fruit
Water	84.2 g
Food energy	57 calories
Protein	1.2 g
Carbohydrates: Total	13.6 g
Carbohydrates: Fiber	3.0 g
Ash	0.5 g
Calcium	22 mg
Phosphorus	22 mg
Iron	0.9 mg
Potassium	168 mg
Vitamin A	130 I.U.
Ascorbic acid	25 mg

Rubus parviflorus

Thimbleberry

The fruit has been collected for food by many residents (Brebner; Gill, S.; Naegele 1974; Tredway; Wilcox). A jam can be made by mixing the fruit half and half with honey (Tredway).

Naegele (1974) stated that the young green stems are collected, peeled, and then used for food, a use which he

claimed is unique to the Copper Country. None of the people I interviewed mention this use.

Thimbleberry plants are common along roadsides and in open moist areas throughout Upper Michigan (Billington 1949; Gill, S.).

Sorbus L.

Mountain ash

I have used mountain ash fruit, which is available during late summer and fall, to make a strong flavored jam. Mountain ash [fruit] has also been used as a source of dye for wool. See Table 22 for details.

TABLE 22

MOUNTAIN ASH DYES
(Vielmetti)

Mordant	Color
alum	light pink-flesh
chrome	light flesh
copper	very light tan
iron	light flesh
tin	violet-blue-gray

These small trees occur both as ornamentals and wild throughout the peninsula (Gill, S.).

Family Fabaceae

The Bean Family

[Formerly combined with two other families under the name Leguminosae]

Lathyrus maritimus (L.) Bigel.

Beach pea

Beach peas have been collected for food by Upper Michigan residents (Brebner; Gill, S.).

Beach pea occurs along the shores of the Great Lakes (Gleason, H. 1952) and on the sand dunes along Lake Superior.

Trifolium pratense L.

Red clover

The flowers have been used raw in salads (Gill, S.; Ludlow), and to make a "sweet" tea (Naegele 1974).

Naegele (1974) states that according to St. Arnold[11] the Ojibwa Indians made a syrup of the flowers which soothed the throat and stopped persistent coughs.

Red clover is a native of Europe (Gleason 1952) commonly escaped in fields and on roadsides throughout Upper Michigan.

Trifolium repens L.

White clover

Georgevich has made tea from white clover flowers.

[11]See list of interviewees.

White clover is a native of Europe and possibly North America (Gleason, H. 1952), commonly found in lawns, fields, and along roadsides throughout Upper Michigan (Gill, S.).

Order Sapindales

Family Anacardiaceae

The Cashew Family

Rhus L.

Sumac

Only the use of sumac as a source of dye was recorded in Upper Michigan. Table 23 lists the details concerning the use of sumac for dyes.

TABLE 23

DYES FROM SUMAC

Plant part used	Mordant	Color	Material dyed	Reference
Leaves	none	light brown	wool	Vielmetti
Leaves	copper	brown	wool	Vielmetti
Leaves	tin	gold	wool	Vielmetti
Berries	none	tan	wool	Vielmetti
Berries	copper	tan	wool	Vielmetti
Berries	tin	tan	wool	Vielmetti
Berries	unknown	golds	wool	Beyer
Berries	unknown	grays	wool	Beyer
Berries	none	light wine red	black ash	Oliver

Sumacs are found on dry, often rocky, soil throughout Upper Michigan (Billington 1949; Gleason, H. 1952).

Family Aceraceae

The Maple Family

Acer saccharum Marsh.

Hard maple

Sugar maple

Sugar maple sap, which is available in the spring, has been extensively used for making maple syrup and maple sugar (Gill, G.; Gill, S.), products which have often been sold commercially.

Felt has used maple leaves (species unspecified) as a fertilizer.

Sugar maple, which occurs throughout Upper Michigan, prefers rich, moist soil (Otis 1931).

Family Hippocastanaceae

The Horse-Chestnut or Buckeye Family

Aesculus L.

Buckeyes

Horse-chestnuts

Wilcox stated that his grandfather carried a horse-chestnut in his pocket for arthritis, although a "regular" chestnut (Castanea Mill. species) may have been originally used for this purpose. The species of Aesculus used by Wilcox's grandfather was not specified.

The species grown as an ornamental in Marquette is Aesculus hippocastanum L., which is native to southeast

Europe and adjacent Asia (Gleason, H. 1952; Gill, S.).

Family Balsaminaceae

The Touch-Me-Not Family

Impatiens biflora Willd.

[= Impatiens capensis Meerb.]

Jewel-weed

Touch-me-not

Brebner has used raw jewel-weed leaves to make a poultice for treating poison ivy. He said it worked to clear up an old case of poison ivy that was not healing.

Jewel-weed grows in moist woods, along streams and in springy places (Gleason, H. 1952).

Order Rhamnales

Family Vitaceae

The Grape Family

Vitis L.

Grapes

Concord grapes have been used as a source of dye for wool. The skins produce lilac color with alum and copper mordants, and blue with a tin mordant (Vielmetti).

Native wild grapes can be found in Upper Michigan (Billington 1949), but more frequently in Lower Michigan and Southern Wisconsin (Gleason, H. 1952). Grapes are also occasionally cultivated in at least Marquette and Alger Counties. Cultivated varieties are also readily available commercially (Gill, S.).

Order Malvales

Family Tiliaceae

The Linden Family

Tilia americana L.

Basswood

Linden

Basswood buds have been used for food (Vissering 1977), syrup has been made from the sap (Jenerou 1976), and basswood flowers have been used to make tea (Georgevich; Gill, S.).

A few individuals have described a toy made by placing a pin through a basswood seed which was then put in the bowl of a clay pipe. When someone would blow into the pipe the seed would "bounce around" (Perket & Bennett, Mrs., 1976).

Ottawa (?) Indians have used the inner bark of basswood to make a brown dye for black ash used to make baskets (Oliver).

Basswood prefers moist, rich soils and is frequent in Upper Michigan, especially in the southern portions of the peninsula (Gill, S.; Gleason, H. 1952; Otis 1931).

Order Parietales

Family Hypericaceae

The St. John's-wort Family

Hypericum L.

St. John's-wort

An oil extract of St. John's-wort was used medicinally to treat boils and a water infusion was used for the stomach (Georgevich).

St. John's-worts have also been used as sources of dye. Reportedly these plants may produce a red dye under the right conditions (Beyer; see Krochmal, A. & Krochmal, C. 1974; Robertson, S. 1973). I tried several mordants and processes in hope of obtaining a red color, but the closest I was able to obtain was a shade of pink. Details of the various dyeing procedures and the colors obtained are shown in Table 24.

St. John's-worts are found in a variety of habitats, including along roadsides, along wet shores, in marshes, and in abandoned fields (Gill, S.; Gleason, H. 1952).

TABLE 24

DYES FROM ST. JOHN'S-WORT

Plant part	Mordant	Extract +	Color	Material dyed	Reference
Unknown	alum		gold yellows	wool	Forsberg Beyer
Unknown	alum	iron pot	dull greenish bronze	wool	Forsberg
Unknown	chrome		gold yellows	wool	Vielmetti Beyer
Unknown	copper		greens	wool	Beyer
Unknown	iron		brown greens	wool	Forsberg Beyer
Unknown	tin		orange yellow	wool	Forsberg Beyer
Unknown	stannous chloride and oxalic acid	HCl	orangeish-yellow	porcupine quills	Gill, S. 1975-76
Buds	unknown		possibly red	wool	Beyer
Flowers	$Al_2(SO_4)_3(NH_4)_2SO_4$		pale pinkish tan	porcupine quills	Gill, S. 1975-76
Flowers	$Al_2(SO_4)_3(NH_4)_2SO_4$	oxalic acid	dull pink	porcupine quills	Gill, S. 1975-76
Flowers	$FeSO_4$		warm gray	porcupine quills	Gill, S. 1975-76
Flowers	stannous chloride and oxalic acid		bright orangeish-yellow	porcupine quills	Gill, S. 1975-76

TABLE 24 (continued)

Plant part	Mordant	Extract +	Color	Material dyed	Reference
Leaves and flowers	$CuSO_4$		pea to light olive green	porcupine quills	Gill, S. 1975-76
Leaves and flowers	$CuSO_4$ and oxalic acid		beige	porcupine quills	Gill, S. 1975-76
Leaves and flowers	$FeSO_4$ and oxalic acid		cold gray-brown	porcupine quills	Gill, S. 1975-76
Leaves and flowers	Stannous chloride and oxalic acid	oxalic acid	orange, orange-yellow, warm brown	porcupine quills	Gill, S. 1975-76
Leaves	Stannous chloride and oxalic acid	oxalic acid	warm pink-brown	porcupine quills	Gill, S. 1975-76
Leaves and stems	$Al_2(SO_4)_3(NH_4)_2SO_4$		pale pinkish tan	porcupine quills	Gill, S. 1975-76
Leaves and stems	$FeSO_4$		gray	porcupine quills	Gill, S. 1975-76
Leaves and stems	Stannous chloride and oxalic acid		bright yellow	porcupine quills	Gill, S. 1975-76

Family Violaceae

The Violet Family

Viola L.

Violets

The leaves and flowers of blue, yellow, and white flowering species have been used both after cooking and uncooked for food by Upper Peninsula residents (Georgevich; Gill, S.; Ludlow; Naegele 1974).

The nutritional composition of violets is shown in Table 25.

TABLE 25

NUTRITIONAL VALUES FOR VIOLETS

Constituent	Contents per 100 grams		References
	Blossoms	Leaves	
Water	86 mg	83 g	Gibbons 1966
Vitamin A		15,000 I.U.*	Zennie & Ogzewalla 1977
		20,000 I.U.*	
		8,258 I.U.	Gibbons 1966
Ascorbic acid	150 mg	210 mg	Gibbons 1966
		130 mg*	Zennie & Ogzewalla 1977
		264 mg*	

*_Viola papilionacea_ Puesh.

Violets are common in deciduous forests, mixed forests, along shores, and in rock crevices near water throughout Upper Michigan (Gill, S.).

Order Cactales

Family Cactaceae

The Cactus Family

Lophophora williamsii (Lem. ex Sd.) Coult.

Peyote

Peyote has occasionally been used as an intoxicant by Upper Michigan residents. Knowledge of this potential use is apparently much more widespread than the actual use of this cactus (Confidential Communications: Peyote). There has been some interest indicated in forming a branch of the Native American Church in Marquette County, but to my knowledge this has not occurred.

This plant contains hallucinogenic alkaloids, including mescaline and lophophorine (Hardin & Arena 1974), which contribute to the psychoactive effects obtained from its use.

Peyote cacti are native to central and northern Mexico and southern Texas (Hardin & Arena 1974; Šubík). They have been imported into and occasionally cultivated indoors in Upper Michigan (Confidential Communications: Peyote).

Order Umbellales

Family Araliaceae

The Ginseng Family

Aralia L.

Aralia

The Ojibwa Indians have used aralia as a medicine for a sore stomach (St. Arnold 1977). Naegele (1974) has

apparently utilized the fruit of Aralia nudicaulis L. for food and the root for tea.

Members of this genus are found in woods throughout Upper Michigan (see Billington 1949).

Panax L.

Ginseng

Wilcox said ginseng has been collected near Menominee by a Menominee Indian. A Mohawk Indian who lived in Marquette gave Arguelles a compounded medicine that reportedly contained an extract of wild ginseng root. Roots used to make this medicine that were shown to me by Arguelles looked more like the roots of Aralia nudicaulis than diagrams of the roots of either Panax quinquefolium L. or Panax trifolium L., the species native to this part of North America.

Members of this genus are not common plants in Upper Michigan. I cannot recall having seen any in the wild, although I have heard that ginseng grows near the Marquette-Baraga County line, and I have seen a dried specimen labeled Aralia trifolia [Panax trifolium L.] from the Ontonagon area (Paul 1896).

Family Apiaceae (Ammiaceae, Umbelliferae)
The Parsley Family

Anethum graveolens L.

Dill

Stomach upsets have been treated with dill tea (Nowell).

A native to southern Europe, dill has occasionally been cultivated in home gardens and has escaped into waste areas, and has been available commercially at most food stores in Upper Michigan (Gill, S.; Gleason, H. 1952).

Family Cornaceae
The Dogwood Family

Cornus canadensis L.

Bunchberry

Dwarf cornel

Dwarf dogwood

Cornus canadensis berries, which are available in August, have been used for food by some Upper Peninsula residents (Georgevich; Gill, S.) and to heal oozing blisters (McKelvey 1976). A dogwood, probably this species, was considered capable of healing all manner of infection, including syphilis, by some of the Ojibwa Indians (Le Maire).

Cornus canadensis is found in moist acid woods (Gleason, H. 1952).

Cornus stolonifera Michx.

Kinnick-kinnick

Red Osier

Red Osier Dogwood

Red Willow

Vermilion

Cornus stolonifera has been used to make root-beer (Tredway). A salve made from the bark of this plant has been used by some Upper Michigan Indians for treating sores (Schofield), and the inner bark has been used by the Ojibwa Indians to make a tea which was drunk to get rid of pin worms (Gauthier, M.; Gauthier, R.).

This plant grows in various habitats, including wet areas along streams, rivers, ponds, and lakes (Gill, S.).

Order Ericales

Family Ericaceae

The Heath Family

Arctostaphylos uva-ursi (L.) Spreng.

Bearberry

Kinnikinick

Kinnick-kinnick

Uva-ursi

I have eaten the berry, which Naegele (1974) also considers edible.

A more common use is the smoking of the leaves (Confidential Communications: Kinnick-kinnick, 10

individuals). I traced this use to five different sources. One common mixture consisted of bearberry and sage (Artemesia species). Other plants which have been used for smoking (in kinnick-kinnick mixtures) include sweet gale (Myrica gale), blueberry leaves (Vaccinium species), and mullein leaves (Verbascum thapsus).

Based on the results of interviews with Upper Michigan residents, kinnick-kinnick smoking apparently was not very common in this area during the period of time from 1975 to July 1977. Some probable reasons for this are as follows: (1) Kinnick-kinnick is no longer (to my knowledge) commercially available in Upper Michigan. (During the late 1960's and/or early 1970's, however, kinnick-kinnick was available at a Marquette organic and health food store.) (2) Most people do not recognize bearberry in the field, so they are not able to procure their own supply. (3) Kinnick-kinnick produces only mild, if any, intoxication so there is not this motivation for using it. (4) As far as could be determined, kinnick-kinnick smoke is not physiologically addictive, so people do not become addicted to smoking kinnick-kinnick as they do with tobacco.

The effects of kinnick-kinnick smoking have been discussed with approximately 20 individuals who have used various kinnick-kinnick mixtures, all containing the leaves of Arctostaphylos uva-ursi. The effects described by these people ranged from none, relaxing, similar to

tobacco, to possibly mildly intoxicating (described as similar to low strength Cannabis sativa)(Confidential Communications: Kinnick-kinnick). Reagan (1928) states that the leaves of Arctostaphylos species have been smoked by the Bois Fort Chippewa [Ojibwa] of northern Minnesota near the Ontario border, causing intoxication. Apparently Arctostaphylos uva-ursi was also considered intoxicating in the Pacific Northwest (Gunther 1973).

An evergreen with berries which ripen in late summer and persist into the winter, bearberry grows in sandy soil, in rocky areas, and pine woods (Gill, S.).

Chimaphila umbellata (L.) Bart.

[Chimaphila Pursh and related genera are sometimes separated from the Ericaceae into a separate family, the Pyrolaceae (Wintergreen Family).]

Pipsissewa [Apparently related to the Wood Cree pipisisikweu which means "it reduces it (stone in the bladder) to very fine particles" (Hodge 1912)]

Prince's-pine

Prince's-pine is used by the Ojibwa Indians for treating kidney disorders, especially "weak kidneys" and bedwetting in children. The plant is considered to be of no value after the flower has dried (Gauthier, M.; Gauthier, R.). Davis said that a tea made from this plant was an old Indian remedy for the kidneys and [urinary]

bladder, being used as a tonic. Prince's-pine has also been used as a remedy for arthritis by some Euro-Americans (Holcomb).

Pipsissewa grows in dry woods, especially in sandy soil, throughout Upper Michigan (Billington 1949; Gleason, H. 1952). I have found the plant most frequently in dry mixed forests. Pipsissewa is protected by law in Michigan (Burroughs, n.d.).

Epigaea repens L.

Mayflower

Trailing arbutus

The flowers are mixed with commercial orris root to make an "air perfume," an air freshener, and to make sachets for use in drawers (Davis).

Trailing arbutus, a plant which is protected by law in Michigan (Burroughs, n.d.), occurs in sandy or rocky acid soils throughout Upper Michigan (Billington 1949; Gleason, H. 1952).

Gaultheria procumbens L.

Wintergreen

Wintergreen berries, which often remain on the plant over winter, have been eaten by Upper Peninsula residents (Davis; Gill, S.; Naegele 1974), and the leaves have been used by Ojibwa Indians and Euro-Americans for tea (Gauthier, M.; Gauthier, R.; Gill, S.; Naegele 1974; Olson).

Medicinally, wintergreen leaves have been used to make tea for treating stomach and kidney disorders (Temple) by Euro-Americans and as a remedy for sore throats by Ojibwa Indians (Gauthier, M.). I have used tea made from the leaves for treating colds, and the berries(?) have been used as a spring tonic (Davis).

Wintergreen oil contains 99% methyl salicylate (Grieve 1931), a compound related to aspirin (acetylsalicylic acid), which could account for the plant's medicinal activity as it has been used by Upper Michigan residents.

Wintergreen commonly occurs in woods with acid soils (Gleason, H. 1952) throughout Upper Michigan (Billington 1949).

Gaylussacia baccata (Wang.) K. Koch.

Huckleberry

Huckleberries have been gathered for food (Nadeau). Huckleberries and blueberries are not clearly defined along generic lines by most Upper Peninsula residents. Those plants with very dark or black fruit, especially those berries without bloom, are often called huckleberries (regardless of the genus to which the plant belongs). Those plants whose fruit are blue and/or have a bloom are usually called blueberries (Gill, S.).

This is the only species listed by Billington (1949) for Michigan. He stated that it is common throughout the state, occurring in rocky woodlands, swamps, and bogs.

Ledum groenlandicum Oeder

Labrador tea

Shkōō-dā'-bug - Ojibwa (Gauthier, M.)

[= Shkodēbag (singular), literally fire leaf

Shkodēbgan (plural), literally fire leaves (Rhodes 1977)]

The leaves have been used by several residents to make a beverage tea (Beyer; Georgevich; Gill, G.; Gill, S.; Naegele 1974; Niemi), which has also been used as a remedy for arthritis (Ekert). The Ojibwa have used the tea as a remedy for diarrhea and dysentery, and it is supposed to heal the insides (Gauthier, M.).

Overdoses of Labrador tea may cause violent headache and symptoms of intoxication (Grieve 1931; Stillé & Maisch 1879).

Labrador tea is found throughout Upper Michigan (Billington 1949) in sphagnum bogs, acid spruce and cedar wetlands, and along shorelines where acid conditions prevail. The leaves are available throughout the year (Gill, S.).

Vaccinium L. species

Blueberries

Perhaps the most frequently used wild fruit plant in Upper Michigan, blueberries have been eaten fresh, used in pies, in jams and jellies, in pancakes and muffins, and preserved for future use by canning and freezing (Brebner;

Coles, E.; Davis; Felt; Gilbert; Gill, G.; Gill, J.; Gill, S.; Mrva; Nadeau; Naegele 1974; Temple; Tredway; Wilcox). The nutritional properties of blueberries are shown in Table 26.

TABLE 26

NUTRITIONAL VALUE OF BLUEBERRIES
(Gibbons 1966)

Constituent	Contents per 100 grams of fruit
Water	83.2 g
Food energy	62 calories
Protein	0.7 g
Carbohydrates: Total	15.3 g
Carbohydrates: Fiber	1.5 g
Ash	0.3 g
Calcium	15 mg
Phosphorus	13 mg
Iron	1.0 mg
Potassium	60 mg
Vitamin A	40 I.U.
Ascorbic acid	6 mg

The leaves have been used for tea (Tredway) by some Upper Michigan residents. Temple said that the juices [of the berries] could be used as dyes.

There is some confusion concerning the application of the terms huckleberry and blueberry in Upper Michigan

compared to the "official" use of huckleberry for Gaylussacia species and blueberry for some of the Vaccinium species. In Upper Michigan it has been my observation that huckleberry is the name usually applied to those plants with very dark or black fruit, especially dark or black bloomless fruit, and that blueberry is usually applied to blue fruits, especially those with bloom.

Blueberries are found throughout Upper Michigan (Billington 1949) in mixed and pine forests, especially on jack pine (Pinus banksiana) plains and in open areas with sandy soil, the fruit ripening during July and August (Gill, S.).

Vaccinium macrocarpon Ait.

Cranberry

Vaccinium oxycoccus L.

Cranberry

Cranberries (fruit) have been used for food (Felt; Gill, S.; Naegele 1974) by many Upper Michigan residents.

Both cranberry species are common in bogs throughout Upper Michigan (Billington 1949).

Order Gentianales

Family Oleaceae

The Olive Family

Fraxinus L.

Ashes

Ash sap (species not specified) has been used for treating earaches (Temple).

Fraxinus americana L.

White ash

White ash wood has been used to make snowshoe frames by some of the Potawatomi Indians living in Upper Michigan (Dees).

White ash occurs throughout Upper Michigan, especially on moist, rich, loamy soil (Otis 1931).

Fraxinus nigra Marsh.

Black ash

Black ash has been used by Upper Michigan Indians to make baskets (Gill, S.). The procedure outlined below is based on information from Oliver and Dees as presented by them in a Lake Superior Art Association workshop held in Marquette during August, 1976. First a proper tree must be selected, i.e. one that has grown straight and has not branched extensively, and one that has grown at the proper rate so that the growth rings are spaced at a distance that will result in strips of correct thickness for basket making. With experience this selection can be done by

chopping a small wedge out of the trunk and examining the growth rings. After a good tree is found, it is cut down. The next procedures can be done at the site where the tree was cut, or the log can be transported to a more favorable location.

The log is notched twice at one end, the distance separating the notches determining the width of the strips. Then the log is pounded with the dull edge of an axe. This must be done with the correct amount of force; if too much force is used the growth layers will be smashed, and if too little force is used the layers will not separate easily. The pounding loosens the bark, which is removed, and eventually the growth rings from each other. After extensive pounding, it is possible to easily separate these layers so that each strip is equivalent to one annual growth ring. The strips are usually between 2 to 4 cm. wide and 1.5 to 2 meters long. Length of course is determined by the length of clear log available. If shorter strips are required, the long strips can be cut to any desired length. Strips from the light colored sapwood are preferred to those of the darker heartwood.

The strips are next scraped smooth on both sides with a knife. If the strip is thick enough (which it should be for most uses if a proper tree was chosen), it can be split lengthwise (tangentially) into two thinner strips. To accomplish this the strip is cut half-way across (i.e.

through July-September growth but not May-June growth) the growth ring about 2 cm. from the end. Holding the strip in both hands, the short end is bent away from the cut side. The strip will begin to split into two thinner halves which can then be completely pulled apart. In order to get strips of equal thickness throughout, equal pull must be exerted on both strips. The resulting strips have an extremely smooth side where they were attached. This procedure effectively doubles the amount of useful material obtained from the tree, although each strip is only half as thick. After the strips are thus prepared, they can be dried for future use or they can be used immediately.

When the actual basket baking begins, the strips are soaked in warm water to make them as flexible as possible, and may be dyed with plants such as walnuts, bloodroot or sand-cherries, or with commercial dyes.

Various types of baskets are made, including storage baskets, collecting baskets, and pack baskets. Several residents have learned the technique of making black ash baskets as a result of workshops on the subject as well as from older Indians.

Black ash is common throughout Upper Michigan (Otis 1931). Black ash prefers deep, cold swamps and low river banks, but grows in any good soil (Otis 1931).

Family Asclepiadaceae

The Milkweed Family

Asclepias L.

Milkweed

Several residents have eaten the flower buds of milkweed (Gill, S.). Naegele (1974) recommends eating the young shoots like asparagus. Milkweeds have produced poisonings, including deaths, in sheep, cattle, goats, horses, and domestic fowl (Kingsbury 1964).

Soft yellow and green dyes for use on wool have been obtained from tops of the plants (Beyer).

The latex has been used for removing warts (Wilcox) by placing it on the wart [until the wart disappears]. Milkweed and [conifer] pitch were used for treating colds by the Ojibwa Indians (Gauthier, M.; Gauthier, R.).

Order Polemoniales

Family Boraginaceae

The Borage Family

Symphytum officinale (L.)

Comfrey

Some Upper Michigan residents (De Genaro; Ludlow) considered comfrey to be nutritious and have used it for food.

Comfrey has been considered medicinal (Georgevich; Tredway) and healing (De Genaro) by some people, and the leaves have been used to make poultices to heal injuries (Ludlow).

Laying the leaves by potatoes [plants] reportedly gives the potatoes superior flavor (De Genaro).

A native of Europe (Fernald 1970), comfrey has been cultivated in some Upper Peninsula gardens and has been available in dried form (during the winter of 1976-77 at least) at some organic/health food outlets in this area.

Family Lamiaceae [Labiatae]

The Mint Family

Mentha L.

Mints

Mint tea has been used for the stomach (Georgevich), presumably for upsets, and the leaves have been used for flavoring (Gill, S.).

Mint species are often cultivated in Upper Michigan gardens. *Mentha arvensis* L., our only native species (Fernald 1970), is found in rich moist or wet soils (Gill, S.).

Mentha piperita L.

Peppermint

Peppermint has been used to make tea for treating colds by the Ojibwa Indians (St. Arnold). Naegele (1974) mentioned using peppermint in salad and for making tea.

A mint of European origin (Gleason, H. 1952), peppermint is both cultivated and escaped in Upper Michigan (Gill, S.).

Salvia L.

Sage

Salvia

Salvia has been used as a source of dye for wool. It gives a pink color on wool mordanted with alum, peach color with a tin mordant, and warm gray with an iron mordant (Vielmetti).

Salvia [apparently Salvia splendens Sellow, a native of southern Brazil (Gleason, H. 1952)] is cultivated in some Upper Michigan gardens (Gill, S.).

Family Scrophulariaceae

The Figwort Family

Verbascum thapsus L

Mullein

Mullein has been used for dyes on wool. See Table 27 for mordants, colors, and references.

TABLE 27

MULLEIN DYES

Part of plant	Mordant	Color	References
Flowers	unknown	yellows	Beyer
Unknown	alum	dull orange, brown	Vielmetti
Unknown	tin	gold	Vielmetti

The leaves have been smoked (Beyer) to cure whooping cough (Grieninger) and as part of a kinnick-kinnick mixture

(Confidential Communications: Kinnick-kinnick). The leaves have also been used by Indians living in the Traverse City area as a tobacco (Duhamel). Naegele (1974) has used the leaves to make tea.

Mullein is a native of Europe (Gleason, H. 1952), abundant in fields, along roadsides and in waste places throughout Upper Michigan.

Order Plantaginales

Family Plantaginaceae

The Plantain Family

Plantago L.

Plantains

The leaves have been used for food (Ludlow). The plants reportedly have healing qualities (De Genaro), and the leaves have been used to make poultices or compresses for bee stings (Gelmi 1976).

Order Rubiales

Family Rubiaceae

The Madder Family

Mitchella repens L.

Partridge-berry

Twinberry

Several individuals have eaten the berries (Gill, S.). Partridge-berries are found in various habitats. I have

found them in mixed and coniferous forests, especially in moist soils. The berries overwinter and are available in the spring (Gleason, H. 1952).

Family Caprifoliaceae

The Honeysuckle Family

Sambucus L.

Elder

Elders are found in rich woods (Gleason, H. 1952). Two species are found in Upper Michigan, *Sambucus canadensis* L. (black or common elder) and *Sambucus pubens* Michx. (red elder) (Billington 1949). Both are reportedly found throughout Upper Michigan (Billington 1949). It has been my observation that red elder is more common, at least in Marquette and Alger Counties.

Elders have bad reputations concerning toxicity, yet cases of poisoning clearly caused by them have rarely been recorded. The root is thought to be the most poisonous part and the berries the least toxic part. The berries are considered harmless after cooking. The stems may be toxic, and their use for whistles, blow-guns, and pipe stems should be avoided (Kingsbury 1964). For further information on toxicity concerning *Sambucus pubens*, see the discussion under that species.

In Upper Michigan elder root has been used to make a compound for treating hemorrhoids (Wilcox).

Sambucus canadensis L.

Black elder

Black elderberry

Common elder

The fruit of the black elderberry, which occurs in moist woods, in fields, and along roadsides (Gleason, H. 1952), has been used to make wine (Wilcox).

Sambucus pubens Michx.

Red-berried elder

Red elder

Red elderberry

Stinking elder

The stems have been used, after being stripped of their bark, for pipestems by at least two Euro-Americans (Confidential Communications: Pipes). Neither person reported any toxicity resulting from using elder stems in this manner.

The berries have been used as a source of light khaki dye for chrome mordanted wool (Vielmetti).

In the early 1970's, Militza Georgevich told me that she had used the flower buds of elder for food (as fritters). We subsequently collected some of the flower buds of Sambucus pubens to use in this manner, which were growing along County Road 550 about halfway between Marquette and Big Bay.

I stored my collection for several days under refrigeration, after which I removed the flower buds from the pedicels and added the buds to pancake batter.

After eating these pancakes I suffered from a headache and nausea (without vomiting) which lasted throughout the day but was gone by the following day. I attribute these symptoms to the consumption of the elder flower-buds. (It is possible that the presumed toxicity builds up on standing, and that the fresh flower-buds would not have caused this reaction.) The experience was unpleasant enough so that I did not confirm this reaction by trying the flower-buds a second time. Georgevich has not, to my knowledge, experienced this reaction to the flower-buds.

Order Cucurbitales

Family Cucurbitaceae

The Gourd Family

Cucurbita L.

Squashes

Several residents have used male pumpkin and squash flowers for food, often adding them to pancake batter (Felt; Olson; Robertson, E.).

Pumpkin seeds have been used "for the gall bladder" by some Upper Michigan Indians (Gauthier, M.; Bowden, P.; Shelafoe, Char). Apparently a tea was made from the seeds which was drunk.

Squashes (Cucurbita species) and pumpkins (Cucurbita pepo L.) have been cultivated in Upper Michigan gardens.

Order Asterales

Family Asteraceae [Compositae]

The Aster or Composite Family

Anthemis

Chamomile

Matricaria matricariodes

Chamomile has been used to make tea (Felt; Olson) and has been considered very relaxing (Felt), a natural sedative (Olson). Felt states chamomile would probably be good for high blood pressure, especially if it is a result of tension. Naegele (1974) has made a tea of Matricaria matricariodes for use after overeating.

Anthemis is native to Europe and occurs in fields and waste places (Gleason, H., 1952). I have not seen this genus in Upper Michigan. Matricaria matricariodes is very common and abundant as a weed in the Upper Peninsula, and is frequent in bare portions of lawns and other grassy areas. It can be used as a substitute for chamomile (Gill, S.).

Presumably the plants referred to as chamomile are of the genus Anthemis. There was no opportunity to examine any specimens to confirm their identity as a member of the genus Anthemis, however, and it is likely that some chamomile users were referring to Matricaria matricariodes.

Arctium L.

Burdock

Burdock has been used for food (Felt; Gill, G.; Olson). I have eaten the peeled petioles and peeled central stalks, which are available in the summer, and the roots, which are available in the spring (and fall). Naegele (1974) has also used the roots.

Burdock may be found growing in waste places, along roadsides, and in farmyards throughout Upper Michigan (Gill, S.).

Artemisia L.

Mugwort

Sage

Wormwood

Sage has been used in some kinnick-kinnick mixtures (Confidential Communications: Kinnick-kinnick, 4 or 5

individuals whose knowledge originated from one source).

I have seen the type of sage used in kinnick-kinnick at only one spot in Upper Michigan, on an abandoned farm east of Munising. Other sage used in kinnick-kinnick mixtures has been imported from the northern plains states.

Aster L.

Asters

Cultivated purple asters reportedly give a green dye on wool (mordant unknown). Purple asters give a gold color with no mordant and a maize color with a chrome mordant, both on wool (Vielmetti). Beyer said asters give pale colors.

Wild, native asters are common throughout Upper Michigan. Some cultivated varieties have been grown in Upper Peninsula gardens.

Dahlia

Dahlia

Dahlias have been used as a source of strong, bright yellow dyes (Forsberg; Vielmetti). They are cultivated for their colorful flowers in some Upper Michigan gardens.

Helianthus L.

Sunflowers

Some Upper Michigan Indians have used sunflower seeds for eyesight (Gauthier, M.; Bowden, P.; Shelafoe, C.). Whole sunflower seeds have been used as a source of dye for wool. Use of an alum mordant resulted in a pale tan-green

color, and iron and copper mordants gave a yellow greenish-gray color (Vielmetti).

Sunflowers grow both in the wild and under cultivation in Upper Michigan (Gill, S.; Gleason, H. 1952).

Rudbeckia hirta L.

Rudbeckia serotina Nutt.[12]

Black-eyed-susan

The centers of the flower heads have been used as a source of mauve or purple-beige dye for wool (Forsberg).

Black-eyed-susans are found in fields, disturbed areas, waste lands, and along roadsides (Gleason, H. 1952).

Solidago

Goldenrod

I have used goldenrod flowers to give black ash strips used for making baskets a yellow cast. Table 28 shows various colors obtainable from the flowers with different mordants on wool and porcupine quills.

Goldenrods are native chiefly to North America, with the greatest complexity in the eastern United States (Gleason, H. 1952). Goldenrods occur in fields, along roadsides, in waste places, rocky areas, and in open woods, in both moist and dry soils (Gill, S.).

[12]There is some nomenclatural confusion surrounding black-eyed-susans. They may not be part of the species Rudbeckia hirta L. in the sense of Linnaeus, but rather in the sense of other authors (Fernald 1970).

TABLE 28

DYES FROM GOLDENROD

Mordant	Color	Material dyed	References
Unknown	yellow	unknown	Temple
None	pale yellow	porcupine quills	Gill, S. 1975-76
Alum	yellow-green green-yellow tan	wool	Vielmetti
Potassium alum	pure yellow	porcupine quills	Gill, S. 1975-76
Chrome	gold	wool	Vielmetti
$K_2Cr_2O_7$	deep orangish yellow	porcupine quills	Gill, S. 1975-76
CoO_2 & HCl	old straw	porcupine quills	Gill, S. 1975-76
$CuSO_4$	cold gold	porcupine quills	Gill, S. 1975-76
Iron	dull green	wool	Vielmetti
$FeSO_4$	greenish bronze cold bronze	porcupine quills	Gill, S. 1975-76
$NiSO_4$	very pale yellow	porcupine quills	Gill, S. 1975-76
Tin	bright, deep yellow	wool	Vielmetti
Tin & oxalic acid & HCl	brilliant, deep yellow	porcupine quills	Gill, S. 1975-76

Tagetes L.

Marigold

Marigolds are cultivated in many Upper Michigan gardens and have been used as a source of dye for wool. See Table 29 for details.

TABLE 29

DYES FROM MARIGOLDS

Mordants	Colors	References
Unknown	yellows, oranges	Beyer
Unknown	bright bronze, gold	Forsberg
Alum	light gold	Vielmetti
Chrome	gold, dark gold	Vielmetti
Chrome	yellow	Forsberg
Chrome, iron after-bath	olive green	Forsberg

Tancetum vulgare L.

Tansy

Tansy is used as a source of dye for wool, giving yellows with alum and chrome mordants (Beyer).

Tansy grows along roadsides, in fields and waste places, along railroad tracks and in farmyards throughout Upper Michigan (Gill, S.).

Taraxacum officinale Weber

Dandelion

Dandelions are one of the better known wild food plants in Upper Michigan. Many Upper Peninsula residents have used the leaves for salad and as cooked greens (Davis; De Genaro; Felt; Gill, S.; Grieninger; Ludlow; Nadeau; Naegele 1974; Robertson, E.; Spyker; Temple).

Some residents consider the greens to be high in iron (De Genaro) and potassium (Felt) content. Olson considers the flowers to be high in potassium. These opinions are generally confirmed by Gibbons' (1966) tables on the nutritional properties of various plants. For information on the nutritional value of dandelions, see Table 30.

Wine has been made from the flowers (Davis; Georgevich; Gill, L.; Naegele 1974; Robertson, E.; Spyker; Temple). Nowell reports that the root has been used as a diuretic.

Dandelions have also been used as a source of dye for wool. See Table 31 for details.

The common dandelion is a native of Eurasia (Gleason, H. 1952) which is now common in lawns, disturbed areas, along roadsides, in farmyards and some open woods throughout Upper Michigan (Gill, S.).

TABLE 30

NUTRITIONAL PROPERTIES OF DANDELIONS
(Gibbons 1966)

Constituent	Contents per 100 grams	
	Leaves	Buds
Water	85.6 g	86 g
Food energy	45 calories	
Protein	2.7 g	3.1 g
Carbohydrates: Total	9.2 g	
Carbohydrates: Fiber	1.6 g	
Ash	1.8 g	
Calcium	187 mg	
Phosphorus	66 mg	
Iron	3.1 mg	
Potassium	397 mg	
Vitamin A	14,000 I.U.	800 I.U.
Ascorbic acid	35 mg	30 mg

TABLE 31

DYES FROM DANDELIONS

Mordants	Colors	References
Unknown	yellows	Forsberg
Unknown, iron pot	light sage green	Forsberg
Alum	extremely pale green light yellow-tan pale tan	Vielmetti
Copper	extremely pale green pale tan	Vielmetti
Tin	spring green pale green	Vielmetti

Xanthium L.

Cocklebur

A cocklebur, probably Xanthium strummarium L. as defined in Gleason (1952), has been used as a source of dye for wool. Alum and tin mordants give tan, and chrome gives a light maize color (Vielmetti).

Cocklebur is found in various habitats, including fields, beaches, and waste places (Gleason, H. 1952).

Zinnea L.

Zinnia

Zinnias are frequently cultivated in Upper Michigan flower gardens, and [the flowers] have been used as a source of deep robust yellow-gold colored dyes for wool (Forsberg).

CHAPTER V

DISCUSSION AND CONCLUSION

Food

Based on the data obtained in this study, more plant species were used for food than for any other category of use (see Appendix A). In addition, more people used plants for food than for any other purpose.

Several of the food plants could lend themselves to more intensive exploitation, possibly in the form of home garden or commercial cultivation. Species which I considered likely candidates for more intensive use include Typha latifolia (cat-tail), Chenopodium album (lamb's quarters), Asclepsias (milkweeds), Arctium (burdocks), and Taraxacum officinale (dandelion).

Usually wild food plants were prepared in a manner similar to the way equivalent cultivated plants have been prepared: fruits were used fresh and in jams, jellies, pies and other desserts, greens were used as salad or cooked like spinach, and roots and tubers were cooked. Some food plants, such as Caltha palustris, require special preparation techniques, which are discussed under the individual plant headings.

Parts of plants used for tea (generally leaves) were usually dried, crumbled, and steeped in hot water in a manner similar to the way one would prepare loose commercial tea, although sometimes the teas were made from

fresh plant parts.

Medicines

The evaluation of the value of folk-medicines has been difficult. It is likely that much of what we call folk-medicines were at one time prescribed by the equivalent of a modern doctor, and that this knowledge was handed down from generation to generation (Lucas 1960). If we consider the state of medicine 75 to 100 years ago, the folk-medicines such as are listed in this study do not seem nearly as backward as when they are compared to some of the sophisticated techniques used in the 1970's. In fact, many of these remedies are similar to or the same as "official" remedies in use about 100 years ago. (See Stillé and Maisch [1879] for an informative list of medicines in use about 100 years ago.) These remedies must have helped some people, and some may have a percentage of effectiveness not greatly different from that which modern drugs show (Lucas 1960).

Many factors contribute to the results obtained from a remedy. The plant administered may contain a substance which is active in counteracting the illness suffered by the patient. What the patient expects will happen also may play a major role in the results of a particular treatment. (Note the use of "placebos," i.e. medicines that have no actual activity, in modern medicine for the treatment of certain complaints, especially those of psychosomatic

origin.) Physiological variability among human beings certainly plays a role in determining the results of a particular treatment (Lucas 1960). Thus a plant extract that produces a pronounced effect in an Ojibwa Indian may produce a different reaction in a Swede and no reaction at all in a Serbian. Physiological variability between plants of the same species may also be a factor affecting the results obtained from a given treatment. Plants grown under different ecological conditions, collected during different seasons, or differing genetically may all produce different results when used for medicine.

When comparing laboratory tests for medicinal activity in plants with folk uses of the same plants, we must take into consideration the techniques used by each. Many folk-medicines use freshly picked plant parts from which active substances are lost during prolonged storage and drying or during the extraction process used by the laboratory. Some folk-remedies call for prolonged simmering which may serve to mobilize the active principle, whereas this method of preparation may not be done by the laboratory testing the plant. The results obtained by the laboratory may also depend on numerous other factors, such as the season when the plant was collected, the type of culture media used in the tests, and the bias of the experimenter. (See, for example, Robbins, Hervey, Davidson, Ma, and Robbins 1945.)

There are, of course, many cases too numerous to mention here where a useful drug used in modern medicine was first used for that purpose in folk-medicine.

Based on my limited observations, the people most likely to use plants for medicinal purposes are those whose families used herbal medicines, who have not had ready access to institutionalized medicine (due to economic, geographical, and probably cultural reasons), and/or who are seeking an alternative to institutionalized medicine. Most of the people I interviewed who used plants for medicinal purposes were beyond 50 years of age, and their knowledge apparently is traditional (i.e. they learned it from their parents, grandparents, neighbors and friends). However, several people in their 20's and early 30's who have not followed their parents' life-styles (e.g. they live in a log cabin rather than a city home and/or are involved in some type of "back-to-nature" activity) also use plants medicinally, but often the source of their knowledge is one or another of the popular books available on the subject of herbal medicine.

Many of the people interviewed indicated that they have exchanged plant knowledge with neighbors and friends, often people of different ethnic backgrounds than their own. Thus, for the most part it was not possible to determine the ethnic origin of many of the herbal remedies I recorded.

Where an ethnic origin of a plant use is indicated, it should not be interpreted as meaning that the use originated with that people, as the remedy may have been introduced to the particular ethnic group by another people now forgotten by the current users.

Dyes

Most dyes were extracted from plants by boiling them in water. Occasionally a fermentative or other special process was required (e.g. the soaking of Umbilicaria species in ammonia water for several days) in order to extract the dyes.

Most natural dyes are best suited to wool, and most require the use of a mordant to bind the dye to the wool. The most common mordants and the concentrations I have found useful are shown below. Because I worked with relatively small quantities of material, I based my working formulas on material from Stockholms Läns och Stads Hemslöjdsförening (1976). The mordants I used which are commonly used by Upper Michigan dyers are:

Alum	4 g / liter of water
Potassium dichromate	1 g / liter of water
Copper sulfate	1 to 2 g / liter of water
Iron sulfate	1 to 2 g / liter of water
Stannous chloride	½ to 3 g / liter of water
Stannous chloride & oxalic acid	½ to 3 g / liter of water 1 to 4 g

It was not possible to determine the quantities of mordant used per liter of water by other Upper Michigan dyers.

My data indicated that the use of plants for natural dyes on wool is confined mainly to Euro-American females who are involved in spinning, weaving, knitting, and crocheting as art or craft activities. Some knowledge of dye plants has been retained by some Upper Michigan residents of Indian ancestry, especially in relation to the construction of black ash baskets, although commercial dyes appear to have replaced plant dyes for use on baskets in many cases.

Plants used for smoking

Dried leaves were the most common plant part used for smoking, followed by the bark of trees and shrubs. Use patterns were previously discussed under Arctostaphylos uva-ursi in this report.

Plants used as intoxicants

Most of the marijuana, Psilocybe mushrooms, and peyote are imported. Naematoloma and Amanita muscaria grow in Upper Michigan, and most, if not all, of these two plants that have been used for intoxication were collected in the local area. It is my impression that most of the people using plants to produce intoxication (other than alcohol intoxication) vary from high school age to people in their early 30's. Some marijuana users may be 50 or more, however.

Technological and miscellaneous plant uses

These uses were previously discussed under the particular plant headings.

Conclusion

This study documented the use of at least 153 plant species in Upper Michigan. Of the approximately 100 people contacted during this study, 74 provided usable data. Of these 74 individuals, 48 people used 98 species of plants for food purposes, 33 people used 49 species for medicine, 8 people used 54 species for dyeing purposes, 8 people used 8 species for smoking, 7 people used 5 species for intoxication, and 12 people used 20 species for technological and miscellaneous uses.

Since this study was limited both in numbers of individuals interviewed and in geographical coverage of Upper Michigan, it should not be applied to the entire population of Upper Michigan. Additional work concerning Upper Michigan's ethnobotany, especially in eastern and southern portions of the Upper Peninsula, would help to further increase our knowledge of this aspect of Upper Michigan's culture.

If the traditional and even unique knowledge held by Upper Michigan's residents is to be preserved, it is imperative that additional studies be undertaken in the near future. There are several reasons for this urgency.

(1) The primary source of traditional ethnobotanical information, the elderly members of our society, are dying, often taking their knowledge with them as many people have no interest in (or are unable to) learning this knowledge. Many of the young people interested in useful plants are turning to popular books currently available concerning plant usage rather than learning from the elderly members of society. (2) As interest in useful plants increases, accompanied by an increase in the use of guide books to useful plants, it will become increasingly difficult to separate traditional uses of plants from recently introduced uses. (3) As mobility of the population increases and more people migrate into Upper Michigan, the unique character of the area's ethnobotanical knowledge will continue to decrease.

It is hoped that further work concerning Upper Michigan's ethnobotany will be undertaken in the near future, especially in the eastern and southern portions of the Upper Peninsula, areas for which it was not possible to obtain much data during this study.

COMMUNICATIONS WITH UPPER MICHIGAN

RESIDENTS CITED

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Niemi, Marcella. Marquette, Marquette County. 1976. Private communication on October 20.

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APPENDIX A

PLANTS UTILIZED BY UPPER MICHIGAN RESIDENTS

Numerals indicate the number of residents out of the 74 I interviewed who use the plants in the indicated manner. *indicates a plant which is frequently used in the indicated manner, but for which I did not obtain specific reports from the people I interviewed.

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Eumycota	27	1	1		7		2
Ascomycotina	17						
Helvellaceae	17						
Gyromitra spp.	5						
Morchella spp.	17						
Verpa bohemica	3						

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Basidiomycotina	19	1	1		7		2
Agaricales	18				7		
Amanitaceae	2				2		
Amanita muscaria	2				2		
Tricholomataceae	13						
Armillariella mellea	6						
Collybia familia	1						
Pleurotus spp.	8						
Tricholoma flavovirens	1						
Coprinaceae	5						
Coprinus "inky caps"	3						

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Coprinus comatus	3						
Strophariaceae	4				5		
Naematoloma spp.	4				2		
Psilocybe spp.					3		
Boletaceae	10						
Boletus spp.	6						
Leccinum spp.	4						
Suillus spp.	2						
Cantharellales	4						
Cantharellaceae	4						
Cantharellus spp.	4						

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Aphyllophorales	8		1				2
Polyporaceae	8		1				2
Ganoderma aplanatum			1				2
Ganoderma tsugae	6						1
Lateiporus sulphureus	3						
Polyporus betulina							1
Hydnaceae	4						
Hericium spp.	4						
Lycoperdales	4	1					
Lycoperdaceae	4	1					
Lycoperdon pyriform	1						

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Lichens		1	4				2
Cladoniaceae							2
Cladonia spp.							2
Umbilicariaceae			4				
Umbilicaria spp.			4				
Unknown		1	2				
"Maple lung"		1					
"Rocky Mountain lichen"			2				
Bryophyta							2
Sphagnaceae							2
Sphagnum spp.							2

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Arthrophyta			2	1			1
Equisetaceae			2	1			1
Equisetum spp.			2	1			1
Lycophyta						*	
Lycopodiaceae						*	
Lycopodium spp.						*	
Pterophyta	6		1				
Polypodiaceae	6		1				
Pteridium aquilinum	6		1				

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Coniferophyta	4	9	3			*	5
Pinaceae	4	9	3			*	5
Abies balsamea		5				*	
Larix laricina		3					
Picea spp.		2	1			*	3
Pinus spp.	2	6				*	
Tsuga canadensis	2		2				2
Cupressaceae			1			*	
Thuja occidentalis			1			*	

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Anthophyta	40	30	8	8	3*		7
Monocotyledonae	19	15	4				2
Typhaceae	10	1					
Typha spp.	10	1					
Poaceae		2					2
Hierochloë odorata							2
Triticum aestivum		1					
Zea mays		1					
Araceae	1	1					
Acorus calamus	1	1					
Bromeliaceae		1					
Ananas comosus		1					

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Liliaceae	17	13	4				
Allium cepa		3	4				
Allium sativum		3					
Allium tricoccum	15	2					
Aloe vera		5					
Asparagus officinale	3						
Clintonia borealis	1						
Convallaria majalis			1				
Iridaceae		1					
Iris		1					

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Dicotyledonae	38	26	6	8	3*		7
Myricaceae	2			1(3)			
Comptonia peregrina	2						
Myrica gale	1			1(3)			
Juglandaceae			4				
Juglans nigra			4				
Betulaceae	5		2	1			
Alnus sp.			1				
Betula spp.			1	1			
Corylus cornuta	5						

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Fagaceae	3		1				
Fagus grandifolia	2						
Quercus spp.	2		1				
Cannabinaceae					*		
Cannabis sativa					*		
Urticaceae	4						
Urtica spp.	4						
Aristolochiaceae	2						
Asarum canadense	2						
Polygonaceae	4	1	2				
Rheum rhaponticum		1	1				
Rumex spp.	4	1	2				

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Chenopodiaceae	9						
Chenopodium album	9						
Portulacaceae	5						
Claytonia spp.	4						
Portulaca oleracea	1						
Nymphaeaceae							1
Nymphaea odorata							1
Ranunculaceae	14	7	2				
Caltha palustris	14		2				
Coptis groenlandica		7	2				
Lauraceae	2	2					
Sassafras albidum	2	2					

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Papaveraceae			2				
Sanguinaria canadensis			2				
Brassicaceae	6		1				
Nasturtium officinale	4						
"Wild mustards"	2		1				
Rosaceae	20	3	5	1			1
Amelanchier spp.	6						
Fragaria spp.	8		1				
Potentilla sp.			1				
Prunus sp.				1			
Prunus pensylvanica	3		1				
Prunus pumila	4		1				

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Prunus serotina		1					
Prunus virginiana	4		2				
Pyrus "apples"	6	1	2				
Rosa spp.	7						1
Rubus spp.	1		1				
Rubus "blackberries"	8	2	1				
Rubus "dewberries"	1		1				
Rubus parviflorus	5						
Rubus "raspberries"	11	1	2	1			
Sorbus spp.	1		1				
Fabaceae	5	1					

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Lathyrus maritimus	2						
Trifolium pratense	3	1					
Trifolium repens	1						
Anacardiaceae			3				
Rhus spp.			3				
Aceraceae	*						1
Acer saccharum	*						
Hippocastanaceae		1					
Aesculus sp.		1					
Balsaminaceae		2					
Impatiens biflora		2					

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Vitaceae			1				
Vitis sp.			1				
Tiliaceae	4		1				1
Tilia americana	4		1				1
Hypericaceae		1	4				
Hypericum spp.		1	4				
Violaceae	4						
Viola spp.	4						
Cactaceae					3		
Lophophora williamsii					3		
Araliaceae	1	3					

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Aralia spp.	1	1					
Panax sp.		2					
Apiaceae		1					
Anethum graveolens		1					
Cornaceae	3	5					
Cornus canadensis	2	2					
Cornus stolonifera	1	3					
Ericaceae	20	7	1	5(10)			1
Arctostaphylos uva-ursi	2			5(10)			
Chimaphila umbellata		4					
Epigaea repens							1

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Gaultheria procumbens	6	4					
Gaylussacia baccata	1						
Ledum groenlandicum	6	2					
Vaccinium "blueberries"	14		1				
Vaccinium "cranberries"	3						
Oleaceae		1					3
Fraxinus sp.		1					
Fraxinus americana							1
Fraxinus nigra							3
Asclepiadaceae	3	3	1				
Asclepias spp.	3	3	1				

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Boraginaceae	2	4					1
Symphytum officinale	2	4					1
Lamiaceae	3	2	1				
Mentha spp.	2	1					
Mentha piperita	1	1					
Salvia sp.			1				
Scrophulariaceae	1	1	2	3			
Verbascum thapsus	1	1	2	3			
Plantaginaceae	2	2					
Plantago spp.	2	2					
Rubiaceae	2						
Mitchella repens	2						

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Caprifoliaceae	2	1	1				2
Sambucus sp.		1					
Sambucus canadensis	1						
Sambucus pubens	1		1				2
Cucurbitaceae	3	1					
Cucurbita spp.	3						
Cucurbita pepo		1					
Asteraceae	15	4	5	2(4)			
Anthemis sp.	2	2					
Arctium spp.	5						
Artemisia sp.				2(4)			

APPENDIX A (continued)

Division Sub-division Class Order Family Genus species	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Aster spp.			2				
Dahlia sp.			2				
Helianthus sp.		1	1				
Matricaria matricariodes		1					
Rudbeckia sp.			1				
Solidago spp.			3				
Tagetes spp.			3				
Tanacetum vulgare			1				
Taraxacum officinale	13	1	2				
Xanthium sp.			1				
Zinnea spp.			1				

APPENDIX A (continued

	Food	Medicine	Dye	Smoking	Intoxicant	Ceremonial	Technology & Misc.
Total number of people using plants in the indicated manner	48	33	8	8	7*	*	12
Total number of people interviewed: 74							
Approximate number of species used in each category	98	49	54	8	5	7	20
Number of genera used in each category	70	43	45	8	5	5	16
Number of families used in each category	43	29	27	7	4	3	14

Number of people using plants for specific technologies

Total:	20
Decorative items:	3
Baskets:	3
Chewing gum:	3
Perfume / air freshener:	1
Leather tanning:	1
Snow-shoe frames:	1
Agriculture:	2
Absorbent:	2
Toys:	1
Steel trap deodorizer:	1

TOTALS:	Divisions	8
	Orders	38
	Families	65
	Genera	121
	Species	153

APPENDIX B

PLANTS USED FOR FOOD

Plants	Family
Acer saccharum	ACERACEAE
Acorus calamus	ARACEAE
Allium tricoccum	LILIACEAE
Amanita muscaria	AMANITACEAE
Amelanchier	ROSACEAE
Anthemis	ASTERACEAE
Aralia	ARALIACEAE
Arctium	ASTERACEAE
Arctostaphylos uva-ursi	ERICACEAE
Armillariella mellea	TRICHOLOMATACEAE
Asarum canadense	ARISTOLOCHIACEAE
Asclepias	ASCLEPIADACEAE
Asparagus officinalis	LILIACEAE
Boletus spp.	BOLETACEAE
Brassicaceae "mustards"	BRASSICACEAE
Caltha palustris	RANUNCULACEAE
Cantharellus spp.	CANTHARELLACEAE
Chenopodium album	CHENOPODIACEAE
Claytonia	PORTULACACEAE
Clintonia borealis	LILIACEAE
Collybia familia	TRICHOLOMATACEAE
Comptonia peregrina	MYRICACEAE

Coprinus atramentarius	COPRINACEAE
Coprinus comatus	COPRINACEAE
Coprinus micaceus	COPRINACEAE
Cornus canadensis	CORNACEAE
Cornus stolonifera	CORNACEAE
Corylus cornuta	BETULACEAE
Cucurbita spp.	CUCURBITACEAE
Fagus grandifolia	FAGACEAE
Fragaria	ROSACEAE
Ganoderma tsugae	POLYPORACEAE
Gaultheria procumbens	ERICACEAE
Gaylussacia baccata	ERICACEAE
Gyromitra	HELVELLACEAE
Hericium	HYDNACEAE
Lateiporus sulphureus	POLYPORACEAE
Lathyrus maritimus	FABACEAE
Leccinum spp.	BOLETACEAE
Ledum groenlandicum	ERICACEAE
Lycoperdaceae "puff-balls"	LYCOPERDACEAE
Lycoperdon pyriform	LYCOPERDACEAE
Mentha	LAMIACEAE
Mentha piperita	LAMIACEAE
Mitchella repens	RUBIACEAE
Morchella	HELVELLACEAE

Morchella angusticeps	HELVELLACEAE
Myrica gale	MYRICACEAE
Naematoloma capnoides	STROPHARIACEAE
Naematoloma sublateritium	STROPHARIACEAE
Nasturtium officinale	BRASSICACEAE
Pinus strobus	PINACEAE
Plantago spp.	PLANTAGINACEAE
Portulaca oleracea	PORTULACACEAE
Prunus pensylvanica	ROSACEAE
Prunus pumila	ROSACEAE
Prunus virginiana	ROSACEAE
Pteridium aquilinum	POLYPODIACEAE
Pyrus "apples"	ROSACEAE
Quercus spp.	FAGACEAE
Rosa spp.	ROSACEAE
Rubus "blackberries"	ROSACEAE
Rubus "dewberries"	ROSACEAE
Rubus parviflorus	ROSACEAE
Rubus "raspberries"	ROSACEAE
Rumex spp.	POLYGONACEAE
Rumex acetosella	POLYGONACEAE
Sambucus canadensis	CAPRIFOLIACEAE
Sambucus pubens	CAPRIFOLIACEAE
Sassafras albidum	LAURACEAE
Sorbus sp.	ROSACEAE

Suillus	BOLETACEAE
Suillus pictus	BOLETACEAE
Symphytum officinale	BORAGINACEAE
Tanacetum vulgare	ASTERACEAE
Taraxacum officinale	ASTERACEAE
Tilia americana	TILIACEAE
Tricholoma flavovirens	TRICHOLOMATACEAE
Trifolium pratense	FABACEAE
Trifolium repens	FABACEAE
Tsuga canadensis	PINACEAE
Typha	TYPHACEAE
Urtica	URTICACEAE
Vaccinium "blueberries"	ERICACEAE
Vaccinium "cranberries"	ERICACEAE
Verbascum thapsus	SCROPHULARIACEAE
Verpa bohemica	HELVELLACEAE
Viola spp.	VIOLACEAE

APPENDIX C

PLANTS USED FOR MEDICINE

Plant	Family
Abies balsamea	PINACEAE
Acorus calamus	ARACEAE
Aesculus sp.	HIPPOCASTANACEAE
Allium cepa	LILIACEAE
Allium sativum	LILIACEAE
Allium tricoccum	LILIACEAE
Ananas comosus	BROMELIACEAE
Anethum graveolens	APIACEAE
Anthemis	ASTERACEAE
Aralia	ARALIACEAE
Asclepias	ASCLEPIADACEAE
Chimaphila umbellata	ERICACEAE
Coptis groenlandica	RANUNCULACEAE
Cornus canadensis	CORNACEAE
Cornus stolonifera	CORNACEAE
Cucurbita pepo	CUCURBITACEAE
Fraxinus	OLEACEAE
Gaultheria procumbens	ERICACEAE
Helianthus	ASTERACEAE
Hypericum	HYPERICACEAE

Impatiens biflora	BALSAMINACEAE
Iris	IRIDACEAE
Larix laricina	PINACEAE
Ledum groenlandicum	ERICACEAE
Lichen "Maple lung"	(Unknown)
Lycoperdaceae "puff-balls"	LYCOPERDACEAE
Matricaria matricariodes	ASTERACEAE
Mentha	LAMIACEAE
Mentha piperita	LAMIACEAE
Panax	ARALIACEAE
Picea	PINACEAE
Pinus	PINACEAE
Pinus strobus	PINACEAE
Plantago	PLANTAGINACEAE
Prunus serotina	ROSACEAE
Pyrus "apples"	ROSACEAE
Rheum rhaponticum	POLYGONACEAE
Rubus "blackberries"	ROSACEAE
Rubus "raspberries"	ROSACEAE
Rumex	POLYGONACEAE
Sambucus	CAPRIFOLIACEAE
Sassafras albidum	LAURACEAE
Symphytum officinale	BORAGINACEAE

Taraxacum officinale	ASTERACEAE
Trifolium pratense	FABACEAE
Triticum aestivum	POACEAE
Typha	TYPHACEAE
Verbascum thapsus	SCROPHULARIACEAE
Zea mays	POACEAE

APPENDIX D

PLATS USED AS DYE SOURCES

Plant	Family
Allium cepa	LILIACEAE
Alnus	BETULACEAE
Asclepias	ASCLEPIADACEAE
Aster	ASTERACEAE
Betula	BETULACEAE
Brassicaceae "mustards"	BRASSICACEAE
Caltha palustris	RANUNCULACEAE
Convallaria majalis	LILIACEAE
Coptis groenlandica	RANUNCULACEAE
Dahlia	ASTERACEAE
Equisetum	EQUISETACEAE
Ganoderma aplanatum	POLYPORACEAE
Helianthus	ASTERACEAE
Hypericum	HYPERICACEAE
Juglans nigra	JUGLANDACEAE
Lichen "Rocky Mountain"	(Unknown)
Picea	PINACEAE
Potentilla	ROSACEAE

Prunus pensylvanica	ROSACEAE
Prunus pumila	ROSACEAE
Prunus virginiana	ROSACEAE
Pteridium aquilinum	POLYPODIACEAE
Pyrus "apples"	ROSACEAE
Quercus	FAGACEAE
Rheum rhaponticum	POLYGONACEAE
Rhus	ANACARDIACEAE
Rubus "blackberries"	ROSACEAE
Rubus "dewberries"	ROSACEAE
Rubus "raspberries"	ROSACEAE
Rudbeckia	ASTERACEAE
Rumex	POLYGONACEAE
Salvia	LAMIACEAE
Sambucus pubens	CAPRIFOLIACEAE
Sanguinaria canadensis	PAPAVERACEAE
Solidago	ASTERACEAE
Sorbus	ROSACEAE
Tagetes	ASTERACEAE
Tanacetum vulgare	ASTERACEAE
Taraxacum officinale	ASTERACEAE
Thuja occidentalis	CUPRESSACEAE
Tilia americana	TILIACEAE
Tsuga canadensis	PINACEAE
Umbilicaria spp.	UMBILICARIACEAE

Vaccinium "blueberries"	ERICACEAE
Verbascum thapsus	SCROPHULARIACEAE
Vitis	VITACEAE
Xanthium	ASTERACEAE
Zinnea	ASTERACEAE

APPENDIX E

PLANTS USED FOR SMOKING

Plant	Family
Arctostaphylos uva-ursi	ERICACEAE
Artemisia	ASTERACEAE
Betula	BETULACEAE
Equisetum	EQUISETACEAE
Myrica gale	MYRICACEAE
Prunus "cherry"	ROSACEAE
Rubus "raspberries"	ROSACEAE
Verbascum thapsus	SCROPHULARIACEAE

APPENDIX F

PLANTS USED AS INTOXICANTS

Plant	Family
Amanita muscaria	AMANITACEAE
Cannabis sativa	CANNABINACEAE
Lophophora williamsii	CACTACEAE
Naematoloma "brick-cap"	STROPHARIACEAE
Psilocybe	STROPHARIACEAE

APPENDIX G

CEREMONIAL USES

(Christmas decorations)

Plant	Family
Abies balsamea	PINACEAE
Lycopodium	LYCOPODIACEAE
Picea spp.	PINACEAE
Pinus spp.	PINACEAE
Thuja occidentalis	CUPRESSACEAE

APPENDIX H

PLANTS USED FOR TECHNOLOGICAL AND MISCELLANEOUS PURPOSES

Plant	Family	Use
Acer	ACERACEAE	Fertilizer
Cladonia	CLADONIACEAE	Decorative item
Epigaea repens	ERICACEAE	Perfume/air freshener
Equisetum	EQUISETACEAE	Cleaning
Fraxinus americana	OLEACEAE	Snow-shoe frames
Fraxinus nigra	OLEACEAE	Baskets
Ganoderma aplanatum	POLYPORACEAE	Decorative item
Ganoderma tsugae	POLYPORACEAE	Decorative item
Hierochloë odorata	POACEAE	Baskets Incense
Nymphaea odorata	NYMPHAEACEAE	Perfume/air freshener
Picea	PINACEAE	Chewing gum
Piptoporus betulina	POLYPORACEAE	Decorative item
Rosa	ROSACEAE	Perfume/air freshener
Sambucus pubens	CAPRIFOLIACEAE	Pipe-stems
Sphagnum	SPHAGNACEAE	Absorbent
Symphytum officinale	BORAGINACEAE	Agriculture

Tilia americana	TILIACEAE	Toy
Tsuga canadensis	PINACEAE	Leather tanning Steel trap deodorizer